NORTH BUCK / CHUMP (JOHNSON) LAKES Management Study - 1987

NORTH BUCK/CHUMP (JOHNSON) LAKES MANAGEMENT STUDY 1987

Prepared for: County of Athabasca No. 12
Improvement District No. 18 (South)

Printed by: Planning Branch
Alberta Municipal Affairs

PREPARED FOR THE COUNCIL OF THE COUNTY OF ATHABASCA
AND IMPROVEMENT DISTRICT NO. 18 (SOUTH)
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NORTH BUCK/CHUMP (JOHNSON) LAKES MANAGEMENT STUDY 1987

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PART 1. INTRODUCTION

1.1 BACKGROUND

The attractive natural qualities of the North Buck Lake area have made it a local and regional focal point for recreational and residential development. Within recent years, this area has been subject to further recreational development pressures. Recognizing a need for responsible future management of North Buck Lake and the surrounding shoreland area, the County of Athabasca and Improvement District No. 18 (South) requested the Planning Branch of Municipal Affairs in early 1985, to assist them in the preparation of a lake management study and plan for North Buck Lake. At the same time, Alberta Environment was requested to undertake a water quality study of North Buck Lake, the results of which would be an important component of the lake management study. The County of Athabasca and the Improvement District No. 18 (South) then proceeded to place a development freeze on all lands within 1.5 km of North Buck Lake until such time as the water quality study and lake management plan were completed.

Also in 1985, Alberta Forestry, Lands and Wildlife initiated the preparation of an Integrated Crown Land and Resource Use Management Strategy for the Caslan and North Buck Lake Area. Both the County and the Improvement District were invited to participate in the development of this strategy, the purpose of which was to address crown land use management problems in the Caslan/North Buck Lake Area. Concurrent with this strategy development was the development of a "natural areas concept" for the North Buck/Chump (Johnson) Lakes area by the Public Lands Division of Alberta Forestry, Lands and Wildlife.

During the course of completing the crown land management strategy and the natural areas concept, the interrelated planning issues at North Buck and Chump (Johnson) Lakes became increasingly apparent. A decision was made by the County and the Improvement District to expand the North Buck Lake management study and plan to include Chump (Johnson) Lake and the surrounding shoreland area.

By the spring of 1987, a preliminary planning assessment of the proposed Municipal Recreation Area on Chump (Johnson) Lake had been completed, and Alberta Environment had completed their water quality evaluation of North Buck Lake. The County of Athabasca and Improvement District No. 18 (South) also approved at the time the Terms of Reference for the North Buck/Chump (Johnson) Lakes Management Study and Plan. A ten member steering committee comprised of County and I.D. representatives was appointed by the respective Councils to direct and advise on the development of the study and plan.

The first phase of the study involves the preparation of this report which contains a summary and evaluation of the bio-physical resources, land uses, planning issues, and carrying capacities associated with North Buck and Chump (Johnson) Lakes. The second phase of the study involves the preparation of a report which outlines a proposed lake planning strategy along with related future land use allocation scenarios.

The third and final phase of the study entails the preparation of a lake management plan and its adoption as an area structure plan. This document will reflect the plan goals/objectives and related future land use allocation deemed most appropriate by both the County of Athabasca and Improvement District No. 18 (South). General development policies and regulations will also be included.

1.2 STUDY AREA

The North Buck/Chump (Johnson) Lakes study area is located approximately 170 km (105 mi) northeast of Edmonton and 32 km (20 mi) southwest of Lac La Biche. Both lakes straddle the administrative boundaries of the County of Athabasca No. 12 and Improvement District No. 18 (South).

The study area includes North Buck and Chump (Johnson) Lakes, their islands, shorelines and adjacent shorelands extending approximately 1.5 km back from the high water level of each lake. This boundary encompasses that area in which greatest development pressures and impacts on the lake will normally occur. Secondary roads 663 and 855 provide good road access to the southerly and easterly portions of the study area. Major developments concentrated near North Buck include a provincial recreation area, three multiple lot country residential subdivisions, the Hamlet of Caslan, three private campground sites, a County municipal recreation area and a community picnic recreation area. With the exception of a recently approved municipal recreation area on the southeast corner of Chump (Johnson) Lake, the area west of North Buck Lake and north of Chump (Johnson) Lake is relatively undeveloped. Random camping occurs in a number of areas, and considerable ATV activity occurs west and south of North Buck Lake.

PART 2. RESOURCE INVENTORY AND EVALUATION

2.1 LAKE MORPHOMETRY

North Buck Lake - North Buck is a relatively large lake, having an overall length of 5.3 miles (8.5 km) and a total surface area of approximately 3904 acres (1580 ha). However, the physical configuration of the lake shoreline is such that the northwest and south bays/basins could actually be considered separate lakes, joined by shallow and narrow channels to the main lake basin (Map 2). The surface area of the northwest bay is 692 acres (280 ha) and the area of the south bay is 470 acres (190 ha). Lake level records (kept since 1968) suggest a history of very stable water levels (max. 609.213m; min. 608.50m) at North Buck Lake.

North Buck Lake holds roughly 37,078 acre feet (45,761,875 cu. m) of water, with a total shoreline perimeter length of 26.1 miles (41.8 km). Average lake depth is 9.5 feet (2.9 m), with a maximum depth of 20 feet (6.1 m).

The watershed area surrounding North Buck is small (54 km^2) compared to the surface area of the lake (Map 2). The lake has three intermittent inlet streams and one permanent outlet stream which drains to the Amisk River. Precipitation, groundwater percolation and bottom springs would be the primary sources of lake water inflow.

Chump (Johnson) Lake - Chump (Johnson) Lake is a relatively small lake, having an overall length of 2.3 miles (3.7 km) and a total surface area of 755 acres (306 ha). The lake is essentially oval in shape, with a long and narrow arm extending in a southwesterly direction. Total shoreline perimeter length is 7.0 miles (11.3 km). Average lake depth is 17.4 feet (5.3 m), with a maximum lake depth of 45 feet (13.7 m).

It is interesting to note that although Chump (Johnson) Lake has only one fifth the area of North Buck Lake, both its average depth and maximum depth are greater than North Buck by approximately 50%.

The watershed area surrounding Chump (Johnson) Lake is also small compared to the surface area of the lake. Precipitation, groundwater percolation and bottom springs are the primary sources of lake water inflow. The lake has two small intermittent inlet streams with intermittent drainage out of Chump (Johnson) Lake into North Buck Lake.

2.2 LAKE TROPHIC STATUS

The level of nutrients in a lake are an important indication of water quality. Nutrients are released into lakes from sources such as agricultural runoff, livestock waste, and atmospheric deposition. When the level of nutrients in a lake rises, the lake becomes more fertile and produces an increased amount of plant growth. When the plant growth dies, the process of decomposition consumes oxygen from the water and in turn releases more nutrients into the lake. This process is called "eutrophication". A lake which is fully eutrophic is characterized by an excessive amount of plant and algae growth and a low supply of oxygen.

These conditions give the lake a "murky" and "polluted" appearance and create a less attractive environment for many water based recreation activities. Fish populations may also be reduced or eliminated in those lakes experiencing advanced stages of eutrophication.

North Buck Lake - North Buck Lake was sampled monthly by the Water Quality Control Branch of Alberta Environment between May 1986 and January 1987. An assessment of trends or changes in water quality cannot be made until the lake is sampled again in the future.

Based on the one year of data collected, the lake appears to have relatively good water quality and would be considered mesotrophic. The term "mesotrophic" is used to describe a lake which is moderately productive (fertile). The watershed surrounding North Buck is small compared to the surface area of the lake, so that nutrient (phosphorus) loading is very low. The data collected by Alberta Environment suggests that nutrient (phosphorus) loading from precipitation and bush/forested areas accounts for approximately 71% of the total lake phosphorus loading. A further 28% is generated from cleared/agricultural land. Only about 2% is generated from residential/recreation facility development.

North Buck Lake has a nutrient (fertility) level which results in the production of a moderate amount of plant and algae growth. The lake has occasional algae blooms, which result from nutrient recycling of bottom sediments, but this should not detract from recreational lake activities. Due to the shallow nature of the lake, there is a continuous mixing of water through the summer which results in a well-oxygenated water column. Fish kills in summer would be unlikely unless a very calm period coincided with a severe algae bloom. The single winter of water sampling at North Buck Lake suggests there is sufficient oxygen to overwinter the lakes fish population.

Although the sampling done at North Buck Lake was not of sufficient scale to identify localized variations in lake water quality, visual inspection suggests that the south bay may be less eutrophic than the main lake basin. The clearer water conditions noticed in this bay during the last week of July, 1987, may be accounted for by the relatively protected lake surface (less wind mixing of water layers), the surrounding "sand hills" physiography, and extensive bottom aquatic growth (greater utilization of bottom nutrients at the expense of algal bloom).

Chump (Johnson) Lake - No water quality testing was undertaken at Chump (Johnson) Lake. Although it cannot be technically substantiated, it is likely that the water quality characteristics of Chump (Johnson) Lake are similar to that of North Buck Lake.

2.3 FISH AND WILDLIFE

a) FISHERIES

Fish Species - North Buck Lake contains four sportfish species: yellow perch, northern pike, lake whitefish and walleye. Although indigenous walleye stocks disappeared in the 1950's, the lake has been recently stocked with walleye fingerlings (87,600 in 1984, 32,000 in 1986, and 70,000 in 1987). Non-sport fish species include tullibee (cisco), burbot and white sucker.

Chump (Johnson) Lake contains yellow perch. northern pike and walleye. Non-sport fish species include tullibee (cisco), burbot and white sucker.

Fish Spawning/Habitat - A number of areas in both North Buck and Chump (Johnson) Lakes (Map 3) have been identified as important spawning habitat. Key spawning areas at North Buck are concentrated in the following locations: northeast arm; east shoreline; southwest shoreline; and the narrows between the north bay and the main lake basin.

Little Buck Lake (east of provincial recreation area) once was used as a pike spawning/rearing area but has been unavailable in recent years due to access problems to the main lake basin. Alberta Transportation has plans to place a large culvert under secondary road 855, so as to allow this shallow bay to become an important fish nursery again. Key spawning areas at Chump (Johnson) Lake are located in the east, southwest and northwest bays.

At both lakes, there are areas of aquatic vegetation which provide important foraging, hiding and loafing opportunities for fish. The extensive littoral zone* at North Buck Lake has encouraged particularly high levels of fish production.

Sportfishing - North Buck Lake receives heavy sport fishing pressure, as confirmed by a major creel census** undertaken at the lake between May 15 and August 31, 1984. Approximately 11,600 anglers visited the lake and harvested 9,900 northern pike (6,700 kg) and 5,500 yellow perch (1,300 kg). The pike caught were relatively small while the perch caught were relatively large. The catch per angler-hour was 0.77 pike and 0.49 perch. No walleye or lake whitefish were recorded.

North Buck Lake experienced an overall fishing pressure of 15.7 angler-hours/ha. This was the second highest angling pressure of seven northeastern region lakes surveyed during 1984. Although North Buck was second to Lac Ste. Anne in overall angler hours fished, it had double the angling pressure per hectare due to its smaller size.

With an estimated annual biological production of 6,000 to 8,000 kg for northern pike and a relatively low commercial harvest (averaging under 700 kg annually), the annual sports fishing harvest of approximately 6,700 kg is likely approaching, or at the maximum acceptable level for northern pike. Any significant increase in angling pressure could harm the pike fishery and further reduce the average size of fish caught.

* littoral zone - Refers to that strip along a shoreline where the water is shallow and so supports the greatest abundance of plant and animal life.

** creel census - Refers to an interview survey of sports fishermen at a lake, and solicits information on the number and species of fish caught, the time spent and the degree of satisfaction gained.

Compared to the high number of anglers (49%) catching at least one pike, only 14% caught perch. North Buck Lake has an annual estimated biological production of 6,000 kg to 8,000 kg for yellow perch. Since the recorded sports fish harvest of 1,300 kg is quite low relative to the estimated yellow perch productivity of the lake, it is possible that a significant number are caught during the winter months and/or the perch are a major prey item for the pike.

With respect to the walleye fishery, only occasional sport fish catches have been reported up to 1980, and no commercial catches have been taken since 1972. Although walleye stocking programs were undertaken in 1984, 1986 and 1987, the ultimate success of any walleye re-introduction program will rely heavily upon restricted angling.

No creel census has been undertaken at Chump (Johnson) Lake. Alberta Forestry, Lands and Wildlife officials estimate that the lake also receives moderate to heavy fishing pressure relative to its fish stocks. It is expected that any increase in fishing pressure will probably result in a poor harvest and a diminished attractiveness of the lake for fishermen.

Commercial Fishing - Records of commercial fishing at North Buck Lake date back to 1942. The annual commercial harvest of lake whitefish has increased steadily over this period, while tullibee and northern pike harvests have continually decreased to their present negligible levels. In recent years, the average commercial whitefish harvest has ranged between 9,000 kg and 11,300 kg. Although the theoretical whitefish production is 8,900 kg, actual production appears higher due to the shallowness of the lake and the large littoral area. The existing commercial whitefish harvest has not jeopardized whitefish population levels. Related to whitefish harvest is the extraction of roe, which is used in the production of golden caviar. North Buck is one of the few lakes in Alberta where whitefish are specifically caught at a time when roe can be obtained.

Chump (Johnson) Lake has also been commercially fished since 1942, with the fishery aimed mainly at tullibee, pike and walleye. Since 1974-75 Chump (Johnson) Lake has been commercially fished twice, once in 1976-77 and once in 1984-85. Rather poor catches have resulted in the decline of commercial fishery interests at Chump (Johnson) Lake.

b) WILDLIFE

Wildlife Presence - Waterfowl production on Chump (Johnson) and North Buck Lakes is considered fair. Upland game bird species in the area include Ruffed Grouse, Spruce Grouse and Sharp-tailed Grouse.

Ungulates in the planning area include moose, white-tailed deer and the occasional mule deer. Although the habitat is relatively good, densities of moose and deer are rather low, probably due to the relatively easy access and strong hunting pressures throughout this area. Unfortunately, no information is available on hunting intensity or harvest in the study area.

The planning area overlies three registered trapline areas. The furbearer harvest is primarily composed of muskrat, beaver, coyote, mink and squirrel. Other species occasionally taken are ermine, fisher, fox, lynx and marten.

The variety of habitat types in the planning area is responsible for a good diversity of non-game species of wildlife. In particular, the waterbirds such as herons, Red-necked Grebes, Common and Black Terns are encountered by the recreating public. Songbirds and shorebirds also add greatly to the visitor's enjoyment and appreciation of the area.

Sensitive Wildlife Areas - Two sensitive wildlife areas are situated adjacent to North Buck Lake (Map 3). One area is the site of a Great Blue Heron nesting colony (27 active nests in 1985) and is located at the north end of the lake on the NE11 and N½ of 12-66-18-W4M. The other sensitive area is an Osprey nesting site, situated along the northwest shore of the lake. These nesting sites are classified as "sensitive" due to the fact that both the Great Blue Heron and the Osprey are relatively intolerant of human development and activity. If sufficiently disturbed, both bird species would permanently leave the area.

In addition to the sensitive nesting sites, a number of shoreline "edge" areas were identified (Map 3) by Alberta Forestry, Lands and Wildlife officials as locally important wildlife/waterfowl production sites.

No sensitive wildlife nesting or production areas were identified on Chump (Johnson) Lake.

Environmental Concerns - Alberta Forestry, Lands and Wildlife officials have expressed concern over the serious disturbance that is occurring to the sensitive sand hills around Chump (Johnson) and North Buck Lakes, from indiscriminate/random off-road ATV activity. These activities have resulted in tree cutting, litter, and unnecessarily large areas of disturbed vegetation (with associated loss of plant cover and increased erosion). Impacts on local wildlife can be expected along with impacts on the lake fishery as more ATV and ORV usage destroys natural habitat within the backshore and shoreline areas.

2.4 FORESTRY

The dominant timber species in the study area are Trembling Aspen and Balsam Poplar. Jackpine and Paper Birch are also common in certain locations around North Buck and Chump (Johnson) Lakes. Logging operations in the 1930's cleared out most of the native White Spruce from the area.

Potential for commercial timber production is limited and any possible usage would be confined to cutting for posts, rails and firewood. Local timber permits are issued for these purposes. However, the present forest cover probably serves a more important role as habitat cover for local wildlife; as a retardent to soil erosion and nutrient runoff; and, as a visual/recreational amenity.

Berry Production - The sand hills ecosystem located between Chump (Johnson) and North Buck Lakes and to the east of the provincial recreation area is condusive to blueberry and cranberry production. Apparently, blueberry picking was once a local commercial activity. In more recent decades, berry production has declined due to encroaching underbrush and increased recreational activities in the area.

2.5 AGRICULTURE

Two methods have been used to evaluate the agricultural resources within the study area: the Canada Land Inventory and the Farmland Assessment Rating.

According to the Canada Land Inventory rating, the majority of land area surrounding both North Buck and Chump (Johnson) Lakes has severe (Class 4) to very severe limitations (Class 5) for cereal or perennial forage crop production (Map 4). The sand hills area has limitations so severe that it has been assigned a Class 6 rating. This rating implies that farm improvement practices are not feasible.

The Farmland Assessment Rating provides a means of evaluating the agricultural productivity of cultivated land in terms of its arable crop production. Only those lands which have been cleared and cultivated are given a farmland assessment productivity rating. Consequently, this rating is a reflection of soil capability and individual farm management improvement practices. Land is assessed on the basis of topography, stoniness and other various soil related factors, with the final rating expressed as a percentage of productivity relative to the best farmland in Alberta. The best black soil farmland is rated at 100%.

Cultivated areas with a farmland assessment rating are concentrated around the northwest corner of North Buck Lake (Map 4). These areas fall within a productivity range of 30% to 50%. Local site characteristics and individual farm improvement practices have resulted in some relatively high assessment productivity ratings (35% or higher).

In addition to limited arable crop production, cattle grazing also occurs on unimproved crown lands within the study area. Discussions with the District Agriculturist and the Lands Officer from the Public Lands Division of Alberta Forestry, Lands and Wildlife, indicate that approximately 110 cow-calf units would have access to lands located within the study area at some point in time each year. Of that number, approximately 80 would have direct access to North Buck Lake.

2.6 RECREATION RESOURCES

Four parameters or indicators of recreational suitability were examined in order to assess the physical capabilities of the study area to support recreational use and development. These parameters are: the Canada Land Inventory Recreation Capability Rating; shoreline assessment; topographic assessment; and, soil suitability for sewage disposal and intensive recreation use.

It is important to remember that a detailed site inspection of the entire study area was not possible. Some of the suitability evaluations contained in this report are general in nature and are not intended to replace intensive, on-site investigations.

C.L.I. Recreation Capability Rating - The Canada Land Inventory Recreation Capability Rating provides an assessment of the intensity of recreation use a unit of land has inherent capability to support. The C.L.I. rating also identifies, in order of priority, the type of recreation activities suited to the physical attributes within each unit.

The shoreline of North Buck Lake (Map 5) has varying capabilities for outdoor recreation activity, ranging from moderately high (Class 3) to moderately low (Class 5) capability. However, the majority of the lake's shoreline has only moderatey low capabilities. These Class 5 units, which characterize the main lake basin, are capable of sustaining moderately low, dispersed recreational pursuits. The best feature of the Class 5 shoreline is the opportunity for viewing wetland wildlife. Less important features include angling, cottaging and boating.

The south basin or bay has a predominantly Class 4 shoreline rating, with moderate capabilities to sustain cottaging. Subordinate features are boating and beach activities.

The only areas naturally capable of sustaining moderately high levels (Class 3) of intensive beach and water-contact recreation activity are situated at the provincial campsite and in the southeast corner of the south basin.

No C.L.I. Recreation Shoreline Rating is available for Chump (Johnson) Lake.

Shoreline Assessment - Field survey confirms that much of the North Buck Lake shoreline does not have the intrinsic wet and dry beach* qualities necessary to support any type of intensive beach or water-contact recreation development. Extensive areas of emergent aquatic vegetation growth characterize the vast majority of wet beach in the north basin/bay and the main lake basin (Map 10). Downed shoreline and rounded shoreline bank features typify the shorelines of both North Buck and Chump (Johnson) Lakes. Neither of these "dry beach" characteristics are conducive to most forms of water-related recreational development.

* wet beach - Refers to that portion of the lake bed and shore located below the lake's high water mark and commonly used for wading or swimming.

dry beach - Refers to that portion of the lake shoreline located between the lake's high water mark and the commencement of permanent shoreland vegetation cover.

Areas of North Buck Lake exhibiting wet and dry beach characteristics suited for lakeshore recreation development are generally located as follows:

- the northeast shoreline of the south bay/basin
- the shoreline fronting the provincial campsite
- the shoreline opposite the provincial campsite on the west side of the lake
- the shoreline along the east side of the main lake basin fronting the multi-lot subdivision
- portions of shoreline along the north shore of the north basin fronting Blue Heron Estates
- portions of shoreline along the north shore of the main basin fronting Sections 7 and 8.

No shoreline areas of Chump (Johnson) Lake were identified as having both wet and dry beach characteristics suited for intensive recreational lakeshore development.

Topographic Assessment - The topography and relief of an area can offer both opportunities and constraints for use and development. In combination with other factors, steeply sloping topography can be visually attractive but subject to slippage and erosion. Flat or gently undulating topography may not be visually interesting, but can offer fewer physical constraints and demands to facility development.

Map 6 depicts in a generalized fashion, the topography of the North Buck and Chump (Johnson) Lakes study area. The majority of shoreland area surrounding the main basin of North Buck Lake is gently rolling in nature, with slopes averaging between 5% and 9%. The north basin/bay is characterized by gently undulating topography (0% to 5%). Pockets of high water table and localized steep slopes would be the only topographic limitations to structural development.

The topography of the shoreland surrounding the south basin/bay of North Buck Lake and most of Chump (Johnson) Lake is moderately rolling in nature (9% to 15%). Moderately rolling topography has a higher occurrence of slopes greater than 15%, which pose as constraints to structure development. Erosion and soil slippage hazards are further increased in these areas due to underlying sand deposits.

Notwithstanding certain topography limitations to development which have been identified in the study area, the physiographic characteristics generally provide an attractive and scenic setting for appropriate forms of recreational activity and development.

Soil Suitability for Sewage Disposal and Intensive Recreation - A generalized analysis of the suitability of soils located in the study area for on-site sewage disposal and intensive recreation use was undertaken by the Soils Division of the Alberta Research Council (Map 7). Soils with good or fair to good suitabilities are located north and east of North Buck Lake and west of Chump (Johnson) Lake. These soils comprise less than 20% of the study area.

Soils having poor or poor to fair suitabilities comprise approximately 50% of soils in the study area. These soils are concentrated in the northwesterly, southerly and easterly portions of the study area. The remaining 30% of soils are rated as having fair suitabilities for on-site sewage assimilation and intensive recreation use. They are situated mainly to the west of the main basin of North Buck Lake.

The generally low suitability rating of study area soils can be attributed to the fact that much of the study area is characterized by sand and/or sandy type soils. These soils have very fast percolation rates which could lead to groundwater contamination. Such soils are also susceptible to surface erosion. Therefore, these soil properties are not appropriate for on-site sewage assimilation or intensive recreational uses.

2.7 HISTORICAL RESOURCES

According to information supplied by Alberta Culture and Multiculturalism, there are four known archaeological sites on North Buck Lake. One of these sites was discovered at the provincial recreation area. The remaining three were discovered as a result of historical resources impact assessments conducted on recreational subdivision sites at North Buck Lake (NW14-66-18-W4M; SE28-65-17-W4M). Other than this limited investigation, the majority of the North Buck and Chump (Johnson) Lakes shorelines have not been systematically assessed.

There are unsubstantiated reports from local residents that Indian grave sites and an old Hudson Bay trading post were located within the study area. However, the shorelines of North Buck and Chump (Johnson) Lakes are considered to have high potential for the discovery of additional archaeological sites, since lakeshores were preferred locations for both prehistoric and historic occupations.

Archaeological and historic sites are a non-renewable resource and as such, are extremely susceptible to impacts from development involving land surface disturbance.

PART 3. LAND DISPOSITION AND USE

3.1 CROWN LAND

Approximately 80% of the land within the study area is public crown land, administered and managed by Alberta Forestry, Lands and Wildlife (Map). Use of crown land is granted to individuals through agreements called public land dispositions. The following types of public land dispositions are found in the study area:

Cultivation Permit - issued for cultivation purposes but does not confer right of exclusive possession or profit.

Easements - long term agreements issued to utility companies for utility line right-of-way.

Farm Development Lease - issued for a 10 year period for cultivation, or cultivation and grazing, or a 5 year period if the option to purchase is included.

Grazing Lease - issued for periods of five or ten years on land not suited for cultivation.

Grazing Permit - issued on an annual basis, frequently on lands under reservation for another purpose, or on lands not available for long term dispositions.

Holding Reservation - used to indicate that a specific future use has been identified for the land.

License of Occupation - issued for access roads, trails, docks and piers, etc. for either an indefinite or specific period of time.

Miscellaneous Lease - issued for a maximum term of 25 years (may be renewed) for uses such as residences, recreational cottages, etc.

Miscellaneous Permit - issued generally for temporary types of uses.

Mineral Surface Lease - issued for terms from 10 to 25 years for surface mining (sand, gravel, silica, clay, marl, topsoil, peat moss), gas well sites and batteries.

Pipeline Agreement - issued for pipeline construction and transportation of mineral products.

Recreational Lease - issued to municipalities and societies for recreational purposes, for a term of 21 years.

Protective Notation - imposes a restriction on land use usually due to specific natural features of the land. Examples include lakeshoreline protection, fish and wildlife habitat features, physiographic constraints, recreational parks reservation and natural area reservation.

Wild Rice Operation - permit issued to seed and harvest wild rice.

Protective notations have been issued by Alberta Forestry, Lands and Wildlife against most of the crown quarters in the study area. These notations have been registered to emphasize lakeshore protection around North Buck and Chump (Johnson) Lakes and to identify those crown quarters west of North Buck Lake currently under consideration as a candidate natural area. Alberta Recreation and Parks has protective notations on those crown quarters between Chump (Johnson) and North Buck Lakes having potential for possible future provincial park expansion and development.

Two recreational leases have been issued to the Caslan and District Development Association. One of the leases is for a 29 acre (11.7 ha) day use and picnic area on the east shore of North Buck Lake (SE33-65-17-W4M). The second lease is for the establishment of a public recreational campground on the southeast shores of Chump (Johnson) Lake (Sec. 30-65-17-W4M). This campground is to consist of approximately 30 camping sites and 25 day use parking sites. A picnic and playground area will also be developed along with hiking trails, a lake access point, cooking facilities, pit privies, garbage facilities and a community well. The intent of this campground, which has been funded by the province under the Municipal Recreation Area program, is to focus and contain the existing random camping occurring in the area. This uncontrolled random camping has been causing environmental damage to the sensitive sand hills ecosystem.

The County of Athabasca has established a municipal recreation area on crown land situated adjacent to the north basin "narrows". This facility can accommodate 10 overnight camping units and some limited amounts of day use activity.

Several licenses of occupation have been issued for the development of trails, access roads and docks. Of particular note is the issuance of a license of occupation to the Caslan and District Development Association for the development of recreational trails on a number of crown quarters between Chump (Johnson) and North Buck Lakes. These trails are being developed for hiking, skiing, snowmobiling and ATV use in an attempt to direct and control recreation activity so as to minimize the negative environmental impacts which have been associated with existing random, uncontrolled recreation uses in the area.

The majority of grazing leases issued in the study area are registered against crown quarters located around the northeast shoreline of North Buck Lake. Consequently, there are approximately 4 miles of shoreline which cattle can use to directly access the waters of North Buck Lake.

The most significant development of crown land in the study area has been the provincial recreation area on North Buck Lake. This facility, located on the southeast end of the main lake basin (NW28, SW33-65-17-W4M), is the second most popular and heavily used provincial recreation area in northern Alberta. It is full most summer weekends and overflow camping usually occurs in the park area adjacent to secondary road 855, and to the south of the campsite in the NW28-65-17-W4M. The 1986 provincial recreation area visitation estimates indicate that the North Buck recreation area experienced 6,124 camping party nights and 717 day use parties. Facilities include 80 unserviced camping sites, vault toilets, a public well, picnic tables, 2 boat launch areas (one of which is informal), 2 docks and approximately 3,300 feet (1,000 m) of lake frontage. There are no officially designated swimming areas or playground areas.

The provincial recreation area is currently the subject of redevelopment plans by Alberta Recreation and Parks. The balance of the peninsula area in Sections 28, 29 and 32, bounded on the east by secondary road 855, is being added to the site. Recreational opportunities for this area will focus on walk-in picnicking, beach development, hiking, walk-in/boat-in camping and cross-country skiing.

3.2 PATENTED LAND

Approximately 20% of the land within the study area is patented, and is concentrated at the northwest and southeast corners of North Buck Lake. Most of the patented land north of the lake is cultivated. Patented land south and east of the lake is either undeveloped or being used for recreational purposes.

The Hamlet of Caslan (pop. 475) is also located in the southeast corner of the study area. The hamlet functions as a rural service centre, containing a school, several commercial retail outlets and a number of residential dwellings.

No patented land is located within a 1 mile (1.6 km) radius of Chump (Johnson) Lake.

Recreational development has been the most prominent use of patented land at North Buck Lake (Map 9), and is described in the following summary:

1. N½ 14-66-17-W4M (Blue Heron Estates - Plans 812-1714, 792-0936)

   A total of 117 residential lots have been created by subdivision along the north shore of the north basin/bay. As of July 1987, 38 lots are developed or used for residential/recreation purposes.

2. Pt. NE33-65-17-W4M (Souch Subdivision - Plan 4701 T.R.)

   A total of 8 lots have been subdivided along the east shore of North Buck adjacent to secondary road 855. As of July 1987, all 8 lots are developed or used for residential/recreation purposes.

3. Pt. NE33-65-17-W4M (Private Campground - Block D, Plan 4701 T.R.)

   A 20 acre parcel immediately east of secondary road 855 has been developed into a 36 stall private recreational lease campground. As of July 1987, 16 of these stalls are developed or used for recreation purposes. Access to the lake is via the public reserve parcel immediately west of secondary road 855.

4. Pt. SE28-65-17-W4M (Private Campground)

   Approximately 27 acres (11 ha) of land have been developed into a private recreational lease campground. As of July 1987, 45 stalls (all developed) are located between the lake and secondary road 855. A further 34 stalls are located to the east of secondary road 855, 18 of which are developed or used for recreational purposes.

5. Pt. SE28-65-17-W4M (Recreational Parcel)

Two recreational parcels have been created south of the private campground, between the lake and secondary road 855. Two residences are located at this site, on the larger 21 acre (8.5 ha) parcel.

6. NE20-65-17-W4M (Golden Nodding Estates - Plan 802-2169)

A total of 72 residential lots have been subdivided out of this quarter adjacent to the south basin/bay of North Buck Lake. As of July 1987, 54 lots are developed or used for residential/recreation purposes.

PART 4. LAKE USER SURVEY AND ASSESSMENT

The following summary examines how the North Buck/Chump (Johnson) Lakes study area is used and viewed by the following three distinct lake user groups: property owners; private campground leasees; and, public lake users. This information was collected through the use of questionnaire surveys developed and administered by the North Buck/Chump (Johnson) Lakes planning committee.

A questionnaire was mailed in the latter part of June, 1987 to 140 property owners identified within the study area. A total of 59 questionnaires were returned, representing a response rate of 42%. A total of 170 questionnaires were administered via personal interviews to public lake users at North Buck and Chump (Johnson) Lakes during July and August, 1987. Seventy one of these questionnaires were completed on July 11th at the Chump (Johnson) Lake municipal recreation area and two public camping areas (provincial recreation area and the County municipal recreation area) on North Buck Lake. The remaining 99 questionnaires were completed at the same locations on the August 1st long weekend. Also on the August 1st weekend, 24 questionnaires were completed by occupants of the private lease campground on North Buck Lake.

The summary which follows is intended to provide a general evaluation of lake use for the purpose of identifying key lake planning issues and assessing the overall quality of recreational experience at these lakes. A detailed breakdown of individual user groups responses to specific questions is contained in the Appendix of this report.

4.1 LAKE USER PROFILE

The majority (57%) of property owners in the study area permanently reside in the Edmonton area. Seventy-seven percent indicated that they use their property only on a seasonal basis.

Responses from questionnaires administered to the public lake users and the private campground leasees indicated that the vast majority (over 90%) travelled more than 60 miles (96 km) to visit North Buck and Chump (Johnson) Lakes. Many of these people came from Edmonton, Fort Saskatchewan and Gibbons.

4.2 LAKE PREFERENCE FACTORS

Respondents were asked to give reasons why they chose to come to North Buck or Chump (Johnson) Lakes. By ranking responses, it was possible to identify those features which make these lakes attractive as a recreation destination area. Overall, the four most attractive features identified for North Buck Lake, in descending order of priority were: "good fishing"; "natural lake beauty"; "clean lake water"; and, "good boating". Private campground leasees rated "closeness to friends/relatives" as the fourth most important criteria, likely a reflection of the fact that most come from Gibbons.

As far as Chump (Johnson) Lake is concerned, the four most attractive recreational features identified were, in descending order of priority: "natural lake beauty"; "clean lake water"; "good fishing"; and, "good boating".

4.3 FREQUENCY/INTENSITY OF RECREATIONAL USE

Property owners were asked to estimate how frequently they would use their residence/cottage at North Buck Lake, between the months of May and September, 1987. Approximately 64% of the respondents answered this question. As might be expected, the months of July and August experienced the highest frequencies and intensities of midweek and weekend use. Regular weekend use during the summer months was considerably higher than average midweek use. Average weekend usage rates ranged from a high of 4.28 persons per residence in late June to a low of .94 persons per residence at the beginning of May. The period of most intensive residence/cottage use occured during the May long weekend, when a peak of 5.31 persons per residence was reached. The residence/cottage usage rates evidenced at North Buck Lake are similar to usage rates occurring at other northeastern Alberta lakes which have been studied by Alberta Municipal Affairs.

Public lake users were asked to indicate the number of times they had previously visited the lake in 1987. Thirty-five percent of respondents at the North Buck Lake recreation area had not previously been to the lake in 1987. Forty-five percent had been to the lake at least once. Sixty-two percent of the private campground leasees had been to the lake at least 10 times during 1987. Obviously, there is a correlation between this higher frequency of lake visits and the yearly lease commitments associated with the private campground.

Eighty-eight percent of the Chump (Johnson) Lake users had already been to the lake at least once in 1987.

4.4 RECREATION ACTIVITIES

Respondents were asked to rank the recreational activities in which they participated so as to identify those activities enjoyed most. The ranking of activities indicates that "camping/general relaxation" is the favoured recreation activity at both North Buck and Chump (Johnson) Lakes. This activity was followed closely by "fishing". Other favoured activities were "swimming" and boating("waterskiing" and "powerboating").

Approximately 53% of the property owners and 70% of the private campground leasees recreate at the lake during the winter months.

4.5 LAKE BOATING

Most respondents (85%) indicated they use some type of boat during their stay at the lakes. Motorboats are the most popular form of boating craft used. Eighty-six percent of the property owners and private campground leasees own at least one motorboat, and approximately 16% of the boats at North Buck Lake are over 100 horsepower. Three percent of the boats on Chump (Johnson) Lake are over 100 horsepower. Approximately 34% of the motorboats at both lakes are between 51 and 100 horsepower in size. Canoes are less frequent at the lake along with rowboats and sailboats.

A slight majority (56%) of all respondents feel that boating activities at North Buck Lake should be controlled or regulated in some way. The need for boat speed restrictions was most frequently mentioned along with boating restrictions in certain locations (especially swimming areas).

At Chump (Johnson) Lake, 57% of the respondents support regulations on boating speeds or boating restrictions in certain locations.

The majority (78%) of all respondents at North Buck Lake did not see a need for additional boat launch facilities at the lake. However, 35% of the private campground leasees expressed a need for additional boat launch facilities.

At Chump (Johnson) Lake, 54% of respondents saw a need for additional boat launch facilities.

4.6 ENVIRONMENTAL QUALITY

All of the North Buck Lake respondents were asked if they had perceived any recreational deficiencies in the physical condition of the lake. A slight majority (56%) indicated that they saw no physical deficiencies. One response group that varied significantly from the aggregate response on this question was the property owners. Sixty-eight percent of property owners did perceive physical deficiencies in North Buck Lake. The most frequently reported deficiencies were "shoreline weed growth", "weed growth in open water areas", and "lake algae". The deficiency of greatest concern to public lake users at North Buck Lake was the lack of "good beach areas".

At Chump (Johnson) Lake, 74% of the respondents saw no physical deficiencies in the lake for recreational use. Of those that did, the most frequent deficiency listed was "lack of beach area".

The quality of lake water did not pose a concern to the majority of respondents at either North Buck or Chump (Johnson) Lakes. Of all respondents at North Buck Lake, 60% rated lake water quality as good; 8% rated it as excellent. By comparison, 51% of the Chump (Johnson) Lake respondents rated water quality in that lake as being good; 32% rated it as excellent. Based on this subjective evaluation, the quality of water in Chump (Johnson) Lake appears to be of higher recreational quality than that of North Buck Lake.

As to whether or not lake water quality is changing over time, the concensus of response seems to indicate that lake water quality has stayed about the same at both lakes. Notwithstanding, 25% of the property owners and 21% of the private campground leasees felt that the water quality of North Buck Lake has been getting worse over the years.

4.7 EXISTING AND FUTURE LAKE USE

The vast majority of all North Buck Lake respondents felt that the lake surface (79%) and the public camping area (70%) are adequately used on an average summer weekend. Of the Chump (Johnson) Lake respondents, 39% felt the lake surface was adequately used on an average summer weekend. Fifty-three percent felt the campground was adequately used during this same time period.

During long holiday weekends, an increasing number of respondents at North Buck Lake perceived the lake surface (44%) and the public camping area (54%) to be overused. As far as Chump (Johnson) Lake respondents were concerned, there was no appreciable difference in use intensities between regular and long weekend use periods. The majority of respondents felt the lake surface and the campground to be adequately used.

By way of observation, the respondents most sensitive to perceptions of overuse (both the lake surface and the public campground) were the property owners. Especially during the long weekend use periods, a majority of property owners perceived the lake surface (59%) and the public campgrounds (71%) to be overused. This response may be a reflection of a more deeply rooted interest in the lake and/or a more sensitive awareness of development and change at the lake.

All respondents were asked whether they noted any land use or lake use conflicts occuring at either Chump (Johnson) or North Buck Lake. Only a very small minority of public lake users mentioned any type of land or lake use conflict. However, approximately 30% of the property owners and private campground leasees expressed an awareness of conflicts. Random campers and the problems that are seen to arise from their use was the most frequently mentioned land use conflict. There was also a feeling that ATV use should be restricted or controlled around these lakes.

Many comments were made relating to the need for boating regulations. Concern over motorboat/swimmer conflicts, and motorboat/pleasure boating conflicts were expressed several times. A need for a designated swimming area was noted by numerous respondents.

The question was also asked as to whether additional cottage development would be desirable on North Buck Lake. Sixty percent of the property owners and 65% of the public lake users expressed opposition to further cottage development. However, 64% of the private campground leasees supported further cottage development, perhaps due in part, to a desire to be a future cottage owner at the lake.

In response to the question which asked whether or not additional campground or park development would be desirable at North Buck Lake, 54% of the public lake users and 50% of the private campground leasees responded in the affirmative. Sixty-four percent of the property owners were opposed to any further campground or park development.

Concerning future development at Chump (Johnson) Lake, 89% of the Chump (Johnson) Lake users were opposed to any future cottage development at the lake. Interestingly, 81% of the property owners and private campground leasees at North Buck Lake also expressed opposition to cottage development at Chump (Johnson) Lake. Regarding the issue of additional campground/park development, 69% of the Chump (Johnson) Lake respondents were supportive of the concept as were about 51% of the property owners and private campground leasees. It is interesting to note that 67% of the combined property owner and private campground leasee respondents had never been to Chump (Johnson) Lake.

4.8 GENERAL COMMENTS

Respondents were given an opportunity to make additional comments at the end of the questionnaire. These comments revealed an overall concern about the quality of the lake environment and a desire to protect the lakes from additional development and use. There is also a segment that feels strongly about protecting the natural wildlife of the area.

Many comments were made relating to the need for boating regulations. Concern over boat/swimmer conflicts in the beach area were expressed numerous times.

A need for an additional campground or expansion of the existing facilities was noted by several public lake users. This reflects concern about random campers and the noise and garbage they create. It is also felt that there should be better supervision of the existing camping facilities, and more firewood could be provided.

A need for supervision/patrolling of the camping areas was a concern that several respondents expressed. They also feel there should be more designated camping areas, and free access to all parts of the beach and shoreline. Additional commercial retail services at the lake are not seen as desirable or suitable by the majority of all respondents. Most feel that services are readily available in nearby Caslan.

PART 5. EVALUATION OF LAKE DEVELOPMENT CAPACITY

5.1 BASIC PRINCIPLES

One of the more frequently asked questions during the undertaking of a lake management study is ..."what is the development capacity of the lake?" Unfortunately, there is no simple answer to this question. The reason for this is the fact that a lake can have a number of different development capacities, depending on which "limiting factor" is considered most important. Lake development capacity is typically a function of: bio-physical limitations to development; socio-perceptual limitations to development (ie. quality of recreational experience); or, economic limitations to development. The most critical limitation or "limiting factor" to lake development is ultimately determined by planning goals and objectives. These can reflect concern for either bio-physical, socio-perceptual or economic limitations.

The following is an assessment of the lake development capacities of North Buck/Chump (Johnson) Lakes, based on the information contained in this report. Development capacity has been evaluated in terms of bio-physical limitations and socio-perceptual limitations. The development of planning goals and objectives for North Buck Lake and Chump (Johnson) Lakes must ultimately establish the lake development capacities of these lakes, in conjunction with the major lake planning issues identified in the study area.

5.2 PLANNING ISSUES

Over the course of preparing the North Buck/Chump (Johnson) Lakes Management Study, several key lake planning issues or concerns were identified. These issues which have been summarized below, should provide the basis for assessing the development capacities of North Buck and Chump (Johnson) Lakes, by identifying the most critical limitation or "limiting factor" to lake development.

1. Quality of Sport Fishing - Good lake fishing was identified as one of the most attractive recreational features of North Buck Lake. It is the second most heavily fished lake in northeast Alberta. However, a decline in the quality of the fishing experience is of concern to many lake users, particularly the property owners and the private campground leasees. This perception of fair fishing quality is substantiated by a creel census undertaken at the lake. The creel census results not only identify heavy fishing pressures at the lake, but also suggest that any increases in fishing pressures will jeopardize the lake fishery, considering the fishery productivity levels.

2. Random/Uncontrolled ATV and Camping Activity

Concern has been expressed by the lake user respondents and Caslan area residents over the negative impacts associated with random ATV activity and camping in the study area. Problem areas are concentrated in the sand hills area between North Buck and Chump (Johnson) Lakes, the areas east of North Buck Lake, and the crown parcel immediately south of the provincial campsite. Specific concerns relate to litter, noise and environmental damage caused by these random, uncontrolled users.

3. Lake Boating - A number of respondents suggested that some sort of boating speed controls and localized restrictions on boating activity are needed at both lakes. This would help alleviate existing conflicts between water skiers, swimmers, fishermen and other powerboaters. Swimming areas need to be established adjacent to all major development areas.

4. Additional Lake Development - As far as Chump (Johnson) Lake is concerned, there is an overwhelming consensus that cottage development would be undesirable at this lake. However, most would support future campground/park development. Chump (Johnson) Lake is not considered to be currently experiencing overuse problems.

As for North Buck Lake, there is a mixed opinion as to whether additional cottage or campground/park development is desirable at the lake. The majority of North Buck Lake respondents do not support additional cottage development. However, a slight majority of respondents would support additional campground/park development.

Similarly, North Buck Lake respondents are divided in opinion as to whether the lake surface is overused during long weekends.

5. Provincial Recreation Area Deficiencies - Many respondents at the North Buck Lake provincial recreation area expressed a need for improvements in the existing campsite facilities. Specifically needed are additional beach areas, a playground area for kids, an officially designated swimming area, and a greater supply of dry firewood.

5.3 BIO-PHYSICAL LIMITATIONS TO DEVELOPMENT

The major bio-physical development constraints and limitations within the study area have been summarized on Maps 10 and 11. These land and water based constraints play a large role in determining the bio-physical development capacities of North Buck and Chump (Johnson) Lakes. A brief summary discussion of these constraints follows:

1. Sensitive Wildlife Areas - No major development should be permitted in close proximity to the osprey and great blue heron nesting sites located in the northwest corner of the main lake basin. These birds are sensitive to human noise, activity or development.

2. Sensitive Sand Hills Ecosystem - Although no accurate delineation of the jackpine-sand hills ecosystem exists, it comprises a significant portion of the shoreland area located southwest and southeast of North Buck Lake. This area is particularly sensitive to intensive recreation use and development. Only low environmental impact and passive recreation uses (eg. skiing/hiking trails, nature observation, outdoor education facilities) would be appropriate in these areas.

3. Sensitive Fish Spawning Areas - Several fish spawning areas are located along the southerly shorelines of the main lake basin; the northeasterly arm of the main lake basin; and, the westerly shoreline of the south bay/basin. Water-based recreation development in these areas, with the exception of whitefish spawning areas, would not be appropriate. The area known as "Little Buck Lake" in the NE of Section 28 is the site of sensitive fish habitat and extensive aquatic vegetation. Water-based development would not be advisable around this site. Chump (Johnson) Lake has most of its shoreline occupied by spawning habitat of the various species. Similar water-based recreation development limitations would apply.

4. Wetland Areas - Significant wetland/organic soil areas are situated within the study area. Particularly large areas are concentrated west of North Buck Lake, including the northwest peninsula. These areas are not suited for recreation/residential development.

5. Shallow Lake Depth - In spite of a relatively large surface area, the main lake basin averages only 10 feet in depth. This extremely shallow depth can be considered a limitation to intensive high speed boating use. Since a 50 horsepower motor mixes water to a depth of 15 feet (5 m), large amounts of high speed boating in the main basin will stir nutrient-rich bottom sediments, which in turn would release nutrients into the water and promote weed and algae growth.

6. Shoreline Limitations - The majority of shoreline at North Buck Lake has limitations for water-based recreational use. The northeasterly and westerly shores of the main lake basin are characterized by extensive areas of aquatic vegetation. Drowned or "banked" shoreline conditions are also common in the main lake basin. Shorelines with a northwest exposure are subject to rough water conditions resulting from the fetch of prevailing northwesterly winds. All of these factors combine to render the majority of lake shoreline unsuitable for water-based recreation development.

   The entire shoreline of Chump (Johnson) Lake is also considered unsuitable for water-based recreation development due to the steep and rounded shoreline banks which encompass the lake.

7. Lake Configuration - Narrow channels separate both the north basin/bay and the south basin/bay from the main basin of North Buck Lake. Both channels contain areas of extensive aquatic vegetation; are adjacent to sensitive fish spawning areas; and pose navigation hazards to high speed boating movement. Essentially, these channels are "bottlenecks", which isolate to some degree the south and north basins/bays from the rest of the lake. Consequently, these separate lake environments should be assessed individually in terms of their socio-perceptual capabilities to accommodate water-based recreational use.

   Chump (Johnson) Lake also has an area in the southwest corner of the lake where a narrow and shallow channel, combined with the presence of fish spawning areas and extensive aquatic vegetation, limits water-based shoreland development potential.

5.4 SOCIO-PERCEPTUAL LIMITATIONS TO DEVELOPMENT

Socio-perceptual limitations to recreational development essentially relate to the quality of recreational experience at the lake. Studies done by Alberta Municipal Affairs of 9 lakes in northeastern Alberta clearly demonstrate that as the density of lake development increases, the number of lake users perceiving overuse of the lake surface increases. As lake overuse and related user conflicts increase, the quality of the water-based recreation experience usually declines.

The maximum acceptable density of lake development appears to be between 8 and 10 acres of surface water per recreation unit, depending on the concentration, distribution, and type of lake development. Once density of lake development increases beyond this level, the majority of lake users will perceive overuse of the lake surface during peak use periods.

North Buck Lake - According to our calculations (Appendix 3), the overall density of existing recreation development at the lake is 15 acres of surface water per recreation unit. However, given the fact that the majority of recreational lake development is concentrated around the south and north basins/bays, a more localized lake development density figure was calculated for these basins. The south basin has a current development density of 4 acres/unit while the north basin has a development density of 18 acres/unit. Once currently available undeveloped units are developed or used, densities in these two basins will increase to 3 acres/unit and 6 acres/unit respectively. In comparison, the main lake basin has an existing development density of 26 acres/unit.

An overwhelming number of public lake users, property owners and private campground leasees did not perceive the lake surface or the campground/public beach area to be overused during average summer weekends. During peak use periods, close to half of the respondents (44%) perceived the lake surface overused. A slight majority (54%) perceived the campsite/beach area as overused during this period.

It is revealing that a significantly large percentage of the property owners (59%) and private campground leasees (46%), who are concentrated in either the north or south basins/bays, perceived overuse of the lake surface. Perhaps their sensitivity to overuse is a reflection of the concentrated development (and associated lake usage) in these locations. As existing undeveloped lots are developed or used around these two basins, it is very likely that the percentage of lake users perceiving overuse of the lake surface will increase.

Slightly more than 60% of all lake users were opposed to future cottage development at the lake. Respondents were fairly evenly split on the issue of whether or not additional campground/public beach development would be appropriate at the lake.

Based on this albeit subjective perceptual information , it would appear that the socio-perceptual recreational carrying capacities of North Buck Lake have been reached in the south basin/bay. Once all existing vacant lots (79 lots ±) in the north basin are utilized, socio-perceptual capacities will likely be reached in that basin. The main lake basin, however, has a relatively low density of development and could probably accommodate additional boating use without creating perceived overuse situations.

The better quality undeveloped recreational shorelines remaining at North Buck Lake are concentrated in and around the south basin/bay. Any future development of these areas which would increase lake usage (especially boating activity) will add to the already perceived overused situation during peak use periods.

Chump (Johnson) Lake - Since existing recreational use and development at this lake is occurring on a random, uncontrolled basis, no accurate assessment of existing lake development densities was possible. However, a municipal recreation area campground has been recently approved by provincial and municipal agencies in the southeast corner of the lake. It is proposed that 30 public campsites and 25 day use sites will be created as part of this development. Once this campground is completed and operating, lake development density at Chump (Johnson) Lake will be 14 acres/unit. This density will be well above the maximum acceptable "socio-perceptual" lake development density range of 8 to 10 acres/unit.

Current random use does not appear to be generating any kind of "overuse" situations. Only 5% of lake respondents perceived the lake surface to be overused on long holiday weekends. Seven percent perceived the informal camping area/beach to be overused during the same time period.

Although 90% of the lake users were opposed to cottage development at this lake, almost 70% were supportive of additional campground/park development. Presumably, once the proposed municipal recreation area is developed and operational, the majority of recreational needs at Chump (Johnson) Lake will be accommodated.

APPENDIX #1.

LAKE USER QUESTIONNAIRES:
Property Owner, Public Lake User,
Private Campground Leasee

PROPERTY OWNER QUESTIONNAIRE

NORTH BUCK/CHUMP (JOHNSON) LAKES MANAGEMENT STUDY
COUNTY OF ATHABASCA NO. 12
and
IMPROVEMENT DISTRICT NO. 18
JUNE, 1987

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1. Name and address of property owner (for future mailout information).

   NAME _____

   ADDRESS _____

2. a) Are you a seasonal resident at North Buck Lake?
   ( ) YES ( ) NO

   b) Are you a permanent resident at North Buck Lake?
   ( ) YES ( ) NO

   If so, how many permanent residents on your property? _____

3. Is this property used for agriculture?
   ( ) YES ( ) NO

   a) If YES, is the property used for livestock production?
   TYPE OF LIVESTOCK _____
   ESTIMATED NUMBER _____
   DO THEY HAVE ACCESS TO THE LAKE _____

   b) Is fertilizer used on the property in the production of agricultural crops?
   ( ) YES ( ) NO

4. Where do you obtain your drinking water while at North Buck Lake?
   ( ) LAKE ( ) COMMUNITY WELL
   ( ) SPRING ( ) BRING FROM HOME
   ( ) PRIVATE WELL ( ) OTHER _____

5. What type of waste disposal system do you use for toilets?

( ) PIT TOILET
( ) SEPTIC TANK AND FIELD
( ) CHEMICAL TOILET
( ) PUMP-OUT TANK
( ) OTHER _____

6. How do you dispose of your sink wastes (eg. dishwater) while at North Buck Lake?

( ) DRY WELL
( ) SEPTIC TANK
( ) PIT TOILET
( ) ON THE GROUND
( ) OTHER _____

7. If you own a cottage or recreate at North Buck Lake, why did you choose this lake? Please rank the four most important reasons with 1 being the most important.

( ) FRIENDS OR RELATIVES HAVE HOMES/COTTAGES AT THE LAKE
( ) GOOD FISHING
( ) CLOSE TO GOOD HIGHWAY
( ) CLEAN LAKE WATER
( ) CLOSE TO HOME
( ) NATURAL BEAUTY OF THE LAKE
( ) GOOD BOATING
( ) AVAILABILITY OF LOTS
( ) OTHER _____

8. Do you see any deficiencies in the physical condition of North Buck Lake for recreational use?

( ) YES ( ) NO ( ) DON'T KNOW

If YES, please rank the three most serious problems with 1 being most serious.

( ) ALGAE GROWTH/WATER POLLUTION
( ) NO BEACH AREA
( ) SHORELINE WEED GROWTH
( ) WEED GROWTH IN OPEN AREAS OF LAKE
( ) OTHER _____

9. Please rank the four major recreational activities you engage in at North Buck Lake in order of importance with 1 being the most important.

( ) SWIMMING
( ) FISHING
( ) SAILING
( ) POWER BOATING
( ) CANOEING
( ) WATERSKIING
( ) HIKING
( ) GENERAL RELAXATION
( ) A.T.V.'S
( ) PLAYGROUNDS
( ) OTHER _____

10. Do you participate in recreational activities at North Buck Lake during the winter season?

( ) YES ( ) NO

11. Do you use a boat at North Buck Lake?
( ) YES ( ) NO

If YES, please indicate types and numbers of boats used:

TYPE	NUMBER OWNED	HORSEPOWER
motorboat	_____	_____
rowboat	_____	
canoe	_____	
sailboat	_____	

12. Do you believe there is a need for more public boat launches on North Buck Lake?
( ) YES ( ) NO ( ) DON'T KNOW

13. How would you rate the fishing at North Buck Lake?
( ) EXCELLENT ( ) POOR
( ) GOOD ( ) DON'T KNOW
( ) FAIR

14. How would you rate the overall water quality of North Buck Lake?
( ) EXCELLENT ( ) POOR
( ) GOOD ( ) DON'T KNOW
( ) FAIR

15. Do you think the water quality is:
( ) GETTING BETTER ( ) VARIES OVER TIME
( ) ABOUT THE SAME ( ) DON'T KNOW
( ) GETTING WORSE

16. How would you rate the use of the lake surface (boats, skiers, etc.) on an:

a) Average Weekend
( ) UNDER USED
( ) ADEQUATELY USED
( ) OVER USED
( ) DON'T KNOW

b) Long Holiday Weekend
( ) UNDER USED
( ) ADEQUATELY USED
( ) OVER USED
( ) DON'T KNOW

17. How would you rate the use of the campground/public beach areas on an:

a) Average Weekend
( ) UNDER USED
( ) ADEQUATELY USED
( ) OVER USED
( ) DON'T KNOW

b) Long Holiday Weekend
( ) UNDER USED
( ) ADEQUATELY USED
( ) OVER USED
( ) DON'T KNOW

18. Do you feel that boating use on North Buck Lake should be:
( ) UNRESTRICTED
( ) ZONED TO CONTROL SPEED IN CERTAIN AREAS
( ) ZONED TO PROHIBIT ALL OR SOME TYPES OF BOATING IN CERTAIN AREAS
( ) DON'T KNOW

If you feel boating restrictions are required, please indicate type and location on the attached map.

_____
_____

19. Are you aware of any lake use conflicts (boaters, swimmers, skiers, fishermen) on North Buck Lake?
( ) YES ( ) NO

If YES, please describe the conflicts here, and indicate their location on the attached map.

_____

_____

_____

20. Do you feel that additional cottage development is desirable or appropriate for North Buck Lake?
( ) YES ( ) NO

Please explain: _____
_____
_____
_____

21. Do you feel that commercial retail services (stores, gas stations, etc.) are desirable or appropriate at North Buck Lake?
( ) YES ( ) NO

Please explain: _____
_____
_____
_____

22. Do you feel that additional campground or park development is desirable or appropriate for North Buck Lake?
( ) YES ( ) NO

Please explain: _____

23. How frequently do you recreate at Chump (Johnson) Lake?
( ) OFTEN ( ) OCCASSIONALLY ( ) NEVER

24. Are you aware of any land use conflicts occuring around Chump (Johnson) Lake?
( ) YES ( ) NO

If YES, please describe the conflicts here, and indicate their location on the attached map.

_____

25. Are you aware of any lake use conflicts occuring on Chump (Johnson) Lake?
( ) YES ( ) NO

If YES, please describe the conflicts here, and indicate their location on the attached map.

_____

26. Do you feel that (additional) cottage development is desirable on Chump (Johnson) Lake?
( ) YES ( ) NO

Please explain: _____

27. Do you feel that (additional) campground or park development is desirable or appropriate for Chump (Johnson) Lake?
( ) YES ( ) NO

Please explain: _____

28. To the best of your recollection, please indicate in the spaces provided the **number** of people in your residence/cottage (family, friends, etc.) that have used, are using, or expect to use North Buck Lake on any given day during this summer of 1987. Long weekends are marked with diagonal lines.

1987

MAY

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24 31	25	26	27	28	29	30

JUNE

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

JULY

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

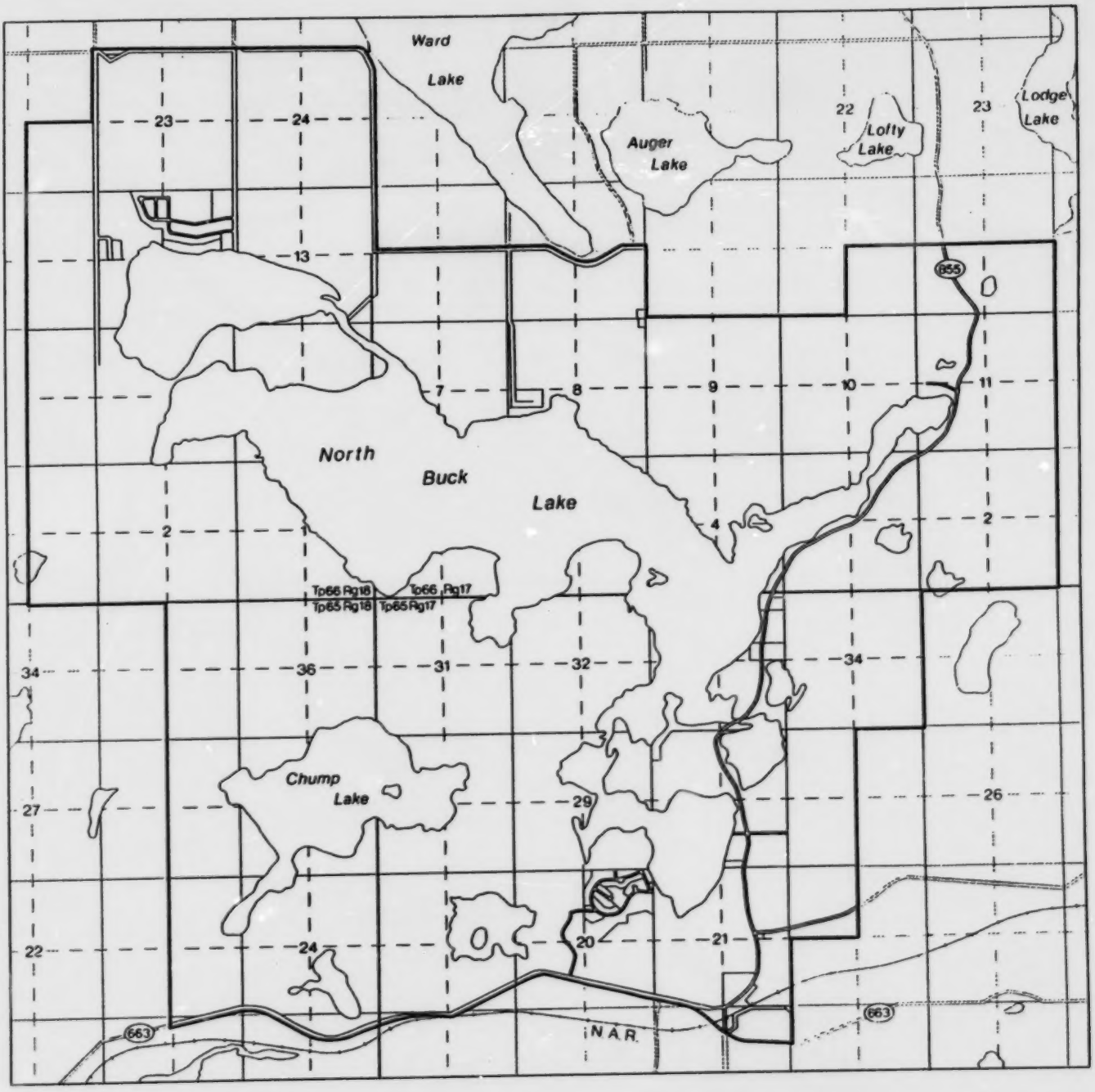
AUGUST

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23 30	24 31	25	26	27	28	29

SEPTEMBER

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

29. We appreciate the time you have taken to answer this questionnaire. Please use this space for any additional comments you may have concerning the North Buck/Chump (Johnson) Lakes area.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Auger
Lake
Lofty
Lake
Lodge
Lake
North
Buck
Lake
Chump
Lake
Tp66 Rg16
Tp65 Rg16
Tp66 Rg17
Tp65 Rg17
N.A.R.
655
663
663

average weekend
long weekend
___ interview date

North Buck Lake
Chump (Johnson) Lake

PUBLIC LAKE USER QUESTIONNAIRE

NORTH BUCK/CHUMP (JOHNSON) LAKES MANAGEMENT STUDY
COUNTY OF ATHABASCA NO. 12
and
IMPROVEMENT DISTRICT NO. 18
SUMMER, 1987

---

1. How far is this Lake from your place of residence?
   - ( ) 10 MILES OR LESS
   - ( ) 11-20 MILES
   - ( ) 21-60 MILES
   - ( ) MORE THAN 60 MILES

2. Approximately how many times have you been to this Lake this year for recreational activities?
   - ( ) 0
   - ( ) 1 - 3
   - ( ) 4 - 6
   - ( ) 7 - 10
   - ( ) MORE THAN 10

3. How long is your typical length of stay at this Lake?
   - ( ) FOR THE DAY
   - ( ) OVERNIGHT
   - ( ) 2 NIGHTS
   - ( ) 3 NIGHTS
   - ( ) OTHER (Please specify _____)

4. Where do you obtain your drinking water while at this Lake?
   - ( ) LAKE
   - ( ) SPRING
   - ( ) BRING FROM HOME
   - ( ) OTHER (Please specify _____)

5. How do you dispose of your solid wastes while at this Lake?
   - ( ) LITTER BARRELS AT LAKE
   - ( ) TAKE BACK HOME
   - ( ) LOCAL LANDFILL SITE
   - ( ) ALBERTA TRANSPORTATION LITTER STOPS
   - ( ) OTHER (Please specify _____)

6. Why did you choose this Lake? Please rank the four most important reasons with 1 for the most important reason, 2 for the second most important reason, etc..

( ) FRIENDS OR RELATIVES HAVE HOMES OR COTTAGES AT LAKE
( ) GOOD FISHING
( ) CLOSE TO GOOD HIGHWAY
( ) CLEAN LAKE WATER
( ) CLOSE TO HOME
( ) NATURAL BEAUTY OF LAKE
( ) AREA HAS ABUNDANT WILDLIFE AND WATERFOWL
( ) GOOD BEACHES
( ) GOOD BOATING
( ) OTHER (Please specify _____)

7. Do you see any deficiencies in the physical condition of this Lake for recreational use?

( ) YES ( ) NO ( ) DON'T KNOW

If YES, please rank the three most serious problems (eg. 1 for most serious problem, 2 for second most serious problem, etc.), and indicate their location on the attached map.

( ) ALGAE GROWTH
( ) NO BEACH AREAa
( ) SHORELINE WEED GROWTH
( ) WEED GROWTH IN OPEN AREAS OF LAKE
( ) OTHER (Please specify _____)

8. Please rank the four major recreational activities you engage in at this Lake, in order of importance (eg. 1 for most important, 2 for second most important, etc.).

( ) SWIMMING ( ) WATERSKIING
( ) FISHING ( ) HIKING
( ) CAMPING ( ) A.T.V.'S
( ) SAILING ( ) PICNICKING
( ) POWER BOATING ( ) GENERAL RELAXATION
( ) CANOEING
( ) OTHER (Please specify _____)

9. If you camp at this Lake what type of camping shelter do you use?

( ) TENT ( ) TRAVEL/TENT TRAILER
( ) VAN/TRUCK CAMPER ( ) MOTORHOME
( ) OTHER (Please specify _____)

10. Do you engage in recreational activities at this Lake during the winter?

( ) YES ( ) NO

11. Do you use a boat at this Lake?
( ) YES ( ) NO

If YES, please indicate type and number of boats used:

TYPE	NUMBER OWNED	HORSEPOWER
MOTORBOAT	_____	_____
ROWBOAT	_____	_____
CANOE	_____	_____
SAILBOAT	_____	_____

12. How would you rate the fishing at this Lake?
( ) EXCELLENT ( ) POOR
( ) GOOD ( ) DON'T KNOW
( ) FAIR

13. a) How would you rate the overall water quality of this Lake?
( ) EXCELLENT ( ) POOR
( ) GOOD ( ) DON'T KNOW
( ) FAIR

b) Do you think the water quality is:
( ) GETTING BETTER ( ) VARIES OVER TIME
( ) ABOUT THE SAME ( ) DON'T KNOW
( ) GETTING WORSE

14. How would you rate the use of the lake surface (boats, skiers, etc.) on an:

a) Average Weekend	b) Long Holiday Weekend
( ) UNDER USED	( ) UNDER USED
( ) ADEQUATELY USED	( ) ADEQUATELY USED
( ) OVER USED	( ) OVER USED
( ) DON'T KNOW	( ) DON'T KNOW

15. How would you rate the use of the campground/public beach areas on an:

a) Average Weekend	b) Long Holiday Weekend
( ) UNDER USED	( ) UNDER USED
( ) ADEQUATELY USED	( ) ADEQUATELY USED
( ) OVER USED	( ) OVER USED
( ) DON'T KNOW	( ) DON'T KNOW

16. Do you feel there is a need for more beaches and day use areas on this Lake?
( ) YES ( ) NO ( ) DON'T KNOW

17. Do you feel that existing boat launch facilities are sufficient?
( ) YES ( ) NO ( ) DON'T KNOW

18. Do you feel that the use of the lake by boats should be:
( ) UNRESTRICTED
( ) ZONED TO CONTROL SPEED IN CERTAIN AREAS
( ) ZONED TO PROHIBIT ALL OR SOME TYPES OF BOATING IN CERTAIN AREAS
( ) DON'T KNOW

If you feel boating restrictions are required, please indicate type and location on the attached map.

19. Do you feel that the existing recreational facilities at this Lake are adequate?
( ) YES ( ) NO ( ) DON'T KNOW

If NO, why?

_____

_____

20. Are you aware of any land use conflicts occuring around this Lake?
( ) YES ( ) NO

If YES, please describe the conflicts here, and indicate their location on the attached map.

_____

_____

21. Are you aware of any lake use conflicts on this Lake?
( ) YES ( ) NO

If YES, please describe the conflicts here, and indicate their location on the attached map.

_____

_____

22. Do you feel that (additional) cottage development is desirable on this Lake?

( ) YES ( ) NO

Please explain:

_____

_____

23. Do you feel that (additional) campground or park development is desirable or appropriate for this Lake?

( ) YES ( ) NO

Please explain:

_____

_____

24. Additional Comments: _____

_____

_____

_____

_____

_____

_____

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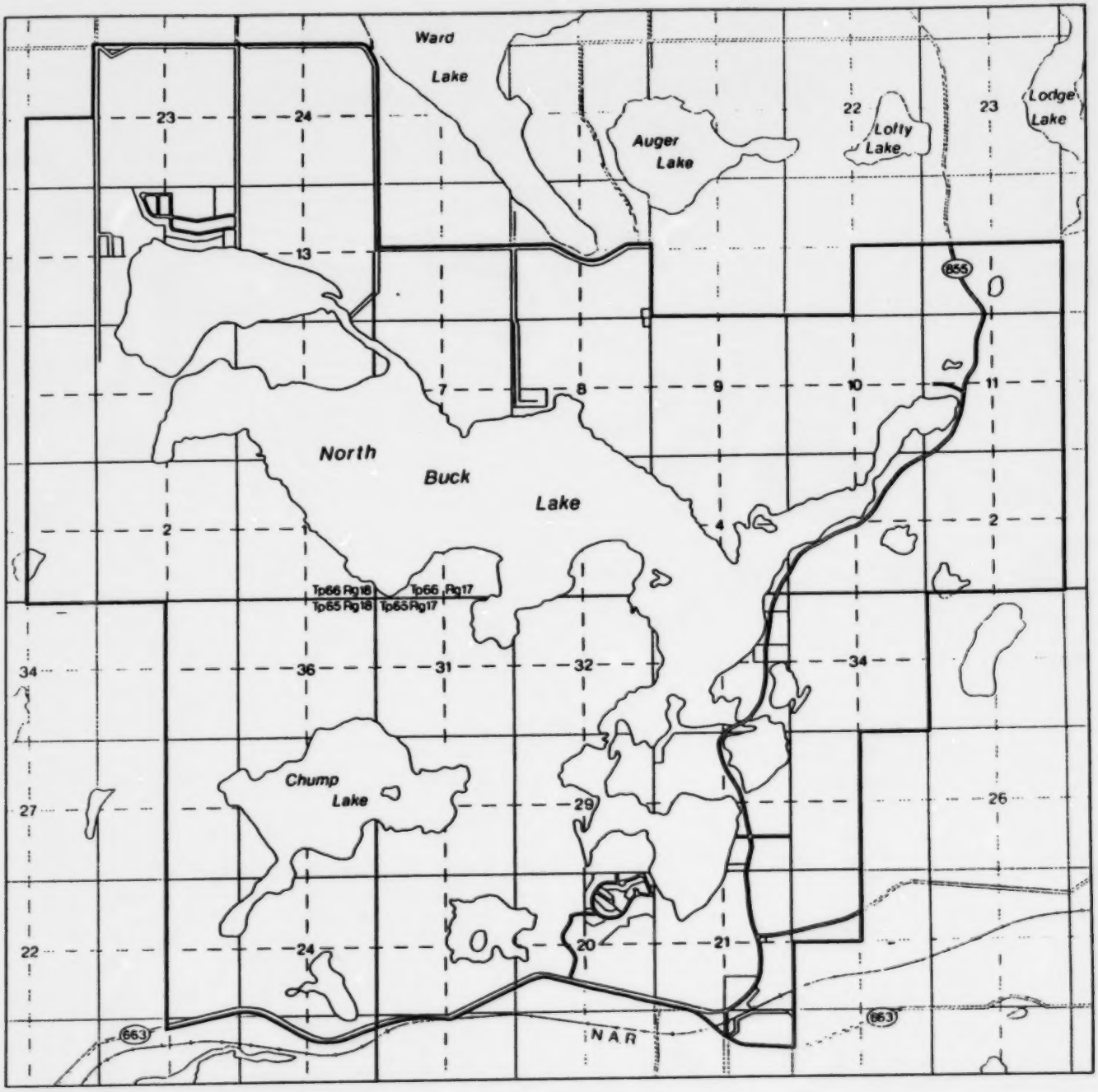
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Lodge
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Chump
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Tp66 Rg17
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PRIVATE CAMPGROUND LEASEE QUESTIONNAIRE

NORTH BUCK/CHUMP (JOHNSON) LAKES MANAGEMENT STUDY
COUNTY OF ATHABASCA NO. 12
and
IMPROVEMENT DISTRICT NO. 18
JUNE, 1987

---

1. How far is this Lake from your place of residence?
   ( ) 10 MILES OR LESS
   ( ) 11-20 MILES
   ( ) 21-60 MILES
   ( ) MORE THAN 60 MILES

2. Approximately how many times have you been to this Lake this year for recreational activities?
   ( ) 0
   ( ) 1 - 3
   ( ) 4 - 6
   ( ) 7 - 10
   ( ) MORE THAN 10

3. How long is your typical length of stay at this Lake?
   ( ) FOR THE DAY
   ( ) OVERNIGHT
   ( ) 2 NIGHTS
   ( ) 3 NIGHTS
   ( ) OTHER
   (Please specify _____)

4. Where do you obtain your drinking water while at North Buck Lake?
   ( ) LAKE
   ( ) SPRING
   ( ) PRIVATE WELL
   ( ) COMMUNITY WELL
   ( ) BRING FROM HOME
   ( ) OTHER _____

5. What type of waste disposal system do you use for toilets?
   ( ) PIT TOILET
   ( ) SEPTIC TANK AND FIELD
   ( ) CHEMICAL TOILET
   ( ) PUMP-OUT TANK
   ( ) OTHER _____

6. How do you dispose of your sink wastes (eg. dishwater) while at North Buck Lake?
   ( ) DRY WELL
   ( ) SEPTIC TANK
   ( ) PIT TOILET
   ( ) ON THE GROUND
   ( ) OTHER _____

7. If you own a cottage or recreate at North Buck Lake, why did you choose this lake? Please rank the four most important reasons with 1 being the most important.

( ) FRIENDS OR RELATIVES HAVE HOMES/COTTAGES AT THE LAKE
( ) GOOD FISHING
( ) CLOSE TO GOOD HIGHWAY
( ) CLEAN LAKE WATER
( ) CLOSE TO HOME
( ) NATURAL BEAUTY OF THE LAKE
( ) GOOD BOATING
( ) AVAILABILITY OF LOTS
( ) OTHER _____

8. Do you see any deficiencies in the physical condition of North Buck Lake for recreational use?

( ) YES ( ) NO ( ) DON'T KNOW

If YES, please rank the three most serious problems with 1 being most serious.

( ) ALGAE GROWTH/WATER POLLUTION
( ) NO BEACH AREA
( ) SHORELINE WEED GROWTH
( ) WEED GROWTH IN OPEN AREAS OF LAKE
( ) OTHER _____

9. Please rank the four major recreational activities you engage in at North Buck Lake in order of importance with 1 being the most important.

( ) SWIMMING
( ) FISHING
( ) SAILING
( ) POWER BOATING
( ) CANOEING
( ) WATERSKIING
( ) HIKING
( ) GENERAL RELAXATION
( ) A.T.V.'S
( ) PLAYGROUNDS
( ) OTHER _____

10. Do you participate in recreational activities at North Buck Lake during the winter season?

( ) YES ( ) NO

11. Do you use a boat at North Buck Lake?

( ) YES ( ) NO

If YES, please indicate types and numbers of boats used:

TYPE	HORSEPOWER	NUMBER OWNED
motorboat	_____	_____
rowboat		_____
canoe		_____
sailboat		_____

12. Do you believe there is a need for more public boat launches on North Buck Lake?
( ) YES ( ) NO ( ) DON'T KNOW

13. How would you rate the fishing at North Buck Lake?
( ) EXCELLENT ( ) POOR
( ) GOOD ( ) DON'T KNOW
( ) FAIR

14. How would you rate the overall water quality of North Buck Lake?
( ) EXCELLENT ( ) POOR
( ) GOOD ( ) DON'T KNOW
( ) FAIR

15. Do you think the water quality is:
( ) GETTING BETTER ( ) VARIES OVER TIME
( ) ABOUT THE SAME ( ) DON'T KNOW
( ) GETTING WORSE

16. How would you rate the use of the lake surface (boats, skiers, etc.) on an:

a) **Average Weekend**
( ) UNDER USED
( ) ADEQUATELY USED
( ) OVER USED
( ) DON'T KNOW

b) **Long Holiday Weekend**
( ) UNDER USED
( ) ADEQUATELY USED
( ) OVER USED
( ) DON'T KNOW

17. How would you rate the use of the campground/public beach areas on an:

a) **Average Weekend**
( ) UNDER USED
( ) ADEQUATELY USED
( ) OVER USED
( ) DON'T KNOW

b) **Long Holiday Weekend**
( ) UNDER USED
( ) ADEQUATELY USED
( ) OVER USED
( ) DON'T KNOW

18. Do you feel that boating use on North Buck Lake should be:
( ) UNRESTRICTED
( ) ZONED TO CONTROL SPEED IN CERTAIN AREAS
( ) ZONED TO PROHIBIT ALL OR SOME TYPES OF BOATING IN CERTAIN AREAS
( ) DON'T KNOW

If you feel boating restrictions are required, please indicate type and location on the attached map.

19. Are you aware of any lake use conflicts (boaters, swimmers, skiers, fishermen) on North Buck Lake?
( ) YES ( ) NO

If YES, please describe the conflicts here, and indicate their location on the attached map.

_____

_____

_____

20. Do you feel that additional cottage development is desirable or appropriate for North Buck Lake?
( ) YES ( ) NO

Please explain: _____

_____

_____

_____

21. Do you feel that commercial retail services (stores, gas stations, etc.) are desirable or appropriate at North Buck Lake?
( ) YES ( ) NO

Please explain: _____

_____

_____

_____

22. Do you feel that additional campground or park development is desirable or appropriate for North Buck Lake?
( ) YES ( ) NO

Please explain: _____

_____

_____

_____

23. How frequently do you recreate at Chump (Johnson) Lake?
( ) OFTEN ( ) OCCASSIONALLY ( ) NEVER

24. Are you aware of any land use conflicts occuring around Chump (Johnson) Lake?
( ) YES ( ) NO

If YES, please describe the conflicts here, and indicate their location on the attached map.

_____

_____

25. Are you aware of any lake use conflicts on Chump (Johnson) Lake?
( ) YES ( ) NO

If YES, please describe the conflicts here, and indicate their location on the attached map.

_____

_____

26. Do you feel that (additional) cottage development is desirable on Chump (Johnson) Lake?
( ) YES ( ) NO

Please explain:

_____

_____

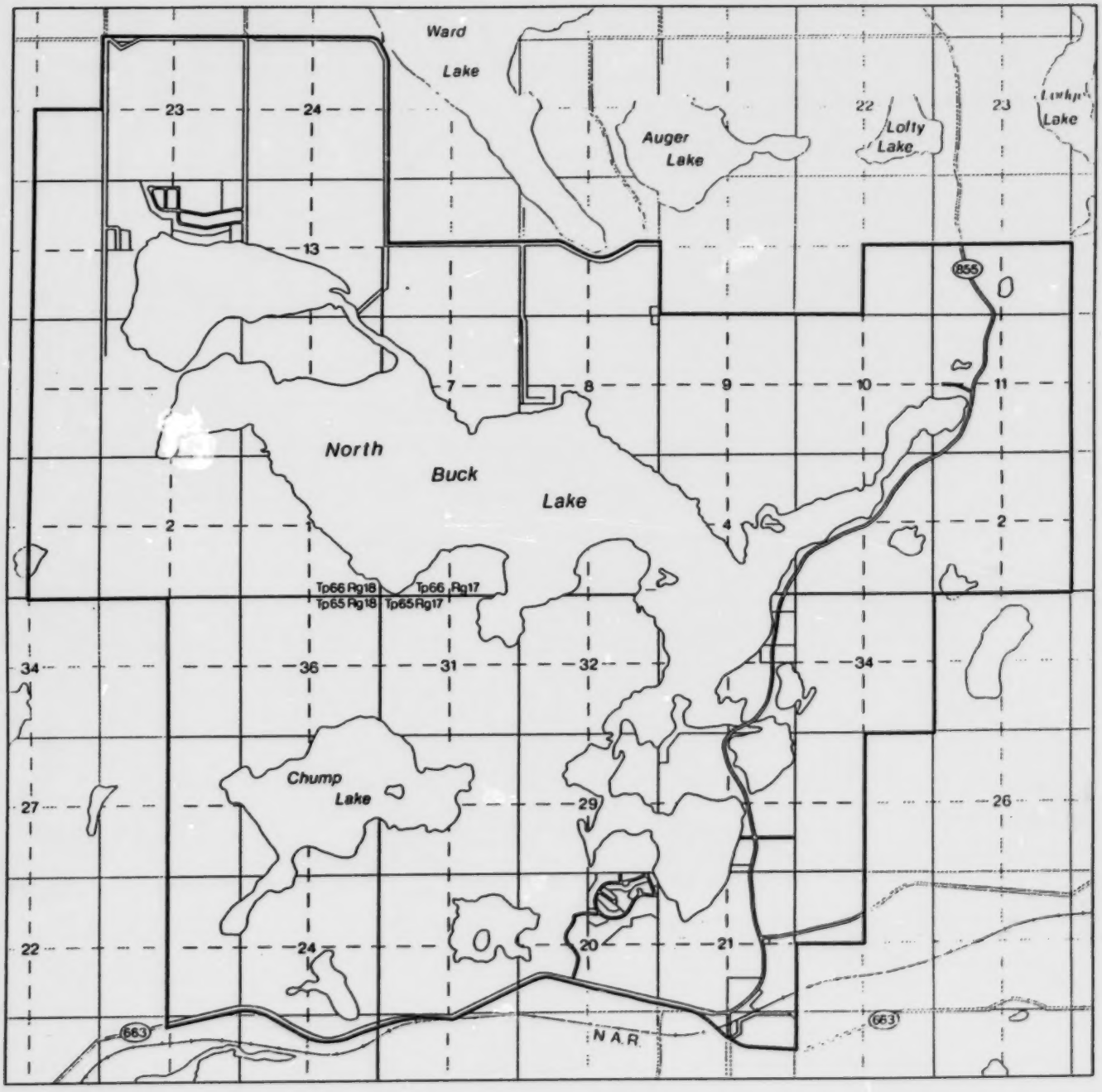
27. Do you feel that (additional) campground or park development is desirable or appropriate for Chump (Johnson) Lake?
( ) YES ( ) NO

Please explain:

_____

_____

28. We appreciate the time you have taken to answer this questionnaire. Please use this space for any additional comments you may have concerning the North Buck/Chump (Johnson) Lakes area.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APPENDIX #2.

LAKE USER QUESTIONNAIRE RESULTS

NORTH BUCK/CHUMP (JOHNSON) LAKES MANAGEMENT STUDY

QUESTIONNAIRE RESULTS

During the months JUNE, JULY and AUGUST of 1987, a total of 334 questionnaires were distributed to the public lake users and property owners, and to the private campground leasees within the study area. The distribution and rates of return were as follows:

A. 71 questionnaires were distributed to the public lake users during the July 11th weekend.

B. 140 questionnaires were mailed out to all property owners in the study area. 59 were returned, representing a response rate of 42%.

C. 123 questionnaires were distributed to the public lake users and private campground leasees on the August 1st weekend.

The following is a statistical summary of the questionnaire results. Parts of the questionnaires differ depending on whether they were distributed to the public lake users, property owners, or private campground leasees. These differences are noted throughout the results.

SECTION - GENERAL INFORMAION
(Property Owner only)

1. COTTAGE OWNER'S RESIDENCE
(N = 58)*

LOCATION	PERCENT
Edmonton & Area	57
Local Area	24
Northern Alberta	9
Central Alberta	7
Out of Province	3

2. SEASONAL RESIDENCY
(N = 57)

SEASONAL	PERCENT
Yes	77
No	23

2b. PERMANENT RESIDENCY
(N = 49)

PERMANENT	PERCENT
Yes	20
No	80

3. PROPERTY USED FOR AGRICULTURE
(N = 59)

AGRICULTURE	PERCENT
Yes	12
No	88

* "N" is the number of property owners who answered the question. All percentages are based on "N".

3b. USE OF FERTILIZER
(N = 44)

FERTILIZER	PERCENT
Yes	4.5
No	95.5

SECTION A - GENERAL INFORMAION
(Property Owner & Campground Leasee)

4. SOURCE OF DRINKING WATER

SOURCE	PROPERTY OWNER (N = 57)	CAMPGROUND LEASEE (N = 24)
Lake	2	--
Spring	--	--
Private Well	26	--
Community Well	7	12.5
From Home	65	83
Other	--	4

5. TOILET WASTE DISPOSAL

METHOD	PROPERTY OWNER (N = 56)	CAMPGROUND LEASEE (N = 24)
Pit Toilet	79	92
Septic Tank	12	--
Chemical Toilet	2	8
Pump-out Tank	2	--
Other	5	--

6. SINK WASTE DISPOSAL

METHOD	PROPERTY OWNER (N = 55)	CAMPGROUND LEASEE (N = 24)
Dry Well	5.5	67
Septic Tank	18	4
Pit Toilet	45.5	12.5
On the Ground	25.5	8
Other	5.5	8

SECTION B - GENERAL INFORMATION
(Public Lake User & Campground Leasee)

1. DISTANCE FROM PLACE OF RESIDENCE

DISTANCE IN MILES	PUBLIC LAKE USER NORTH BUCK (N = 113)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 57)	CAMPGROUND LEASEE (N = 24)
10 or less	1	2	--
11 to 20	2	2	--
21 to 60	3	5	--
more than 60	94	91	100

2. FREQUENCY OF VISITS IN 1987

NUMBER OF VISITS	PUBLIC LAKE USER NORTH BUCK (N = 112)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 57)	CAMPGROUND LEASEE (N = 24)
0	35	--	--
1 to 3	44	88	--
4 to 6	11	12	25
7 to 10	4	--	12.5
more than 10	6	--	62.5

3. TYPICAL LENGTH OF STAY

LENGTH OF STAY	PUBLIC LAKE USER NORTH BUCK (N = 113)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 57)	CAMPGROUND LEASEE (N = 24)
For the Day	2	10.5	--
Overnight	3	--	--
2 nights	51	47	83
3 nights	24	28	12.5
Other	20	14	4

SECTION C - GENERAL INFORMATION
(Public Lake User only)

4. SOURCE OF DRINKING WATER

SOURCE	PUBLIC LAKE USER NORTH BUCK (N = 112)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 57)
Lake	3	5
Spring	1	--
From Home	83	89.5
Other	13	5

5. SOLID WASTE DISPOSAL

SOURCE	PUBLIC LAKE USER NORTH BUCK (N = 112)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 57)
Barrels	88.5	2
From Home	5	63
Landfill Site	--	5
Litter Stop	1	--
Other	5	30

SECTION D - RECREATION
(All surveys except where noted)

6.(7)a*1 LAKE CHOICE
NORTH BUCK - Public Lake User Only

REASONS	RANK WEIGHT*2	RANK	CONSIDERED BY
fishing	716	01	77
natural beauty	532	02	62
clean water	381	03	45
good boating	349	04	43
other	292	05	33
close highway	260	06	30
near home	251	07	29
good beaches	202	08	24
friends/family	130	09	14
animals/birds	51	10	6

*1 6.(7) - the first number corresponds to the question number in the "Public Distribution" survey. The number in brackets represents the corresponding question in the Property Owner/Campground Leasee surveys.

*2 Refer to last page, for explanation of ranking procedure.

6.(7)b LAKE CHOICE
CHUMP (JOHNSON) - Public Lake User Only

REASONS	RANK WEIGHT*2	RANK	CONSIDERED BY
natural beauty	395	01	47
clean water	367	02	43
fishing	355	03	39
good boating	246	04	31
friends/family	169	05	18
other	88	06	10
good beaches	86	07	11
animals/birds	64	08	8
near home	45	09	5
close highway	41	10	5

7.(6)b LAKE CHOICE
Property Owner Only

REASONS	RANK WEIGHT	RANK	CONSIDERED BY
natural beauty	297	01	37
good fishing	237	02	32
clean water	220	03	28
good boating	155	04	23
lots available	137	05	18
other	125	06	15
close highway	102	07	15
friends/family	76	08	11
near home	49	09	6

(7)6.b LAKE CHOICE
Campground Leasee Only

REASONS	RANK WEIGHT	RANK	CONSIDERED BY
clean water	113	01	15
natural beauty	97	02	13
good fishing	83	03	10
friends/family	77	04	10
lots available	59	05	8
good boating	51	06	7
near home	31	07	4
close highway	8	08	1
other	0	09	0

7.(8) PHYSICAL DEFICIENCIES IN LAKES

DEFICIENCY	PUBLIC LAKE USER NORTH BUCK (N = 113)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 55)	PROPERTY OWNER (N = 50)	CAMPGROUND LEASEE (N = 24)
Yes	26	13	68	25
No	64	74	32	75
Don't Know	10	13	--	0

7.(8)a DEFICIENCIES
NORTH BUCK - Public Lake User Only

DEFICIENCIES	RANK WEIGHT	RANK	CONSIDERED BY
no beach	88	01	18
shore weeds	39	02	9
open area weeds	27	03	6
algae	24	04	5
other	19	05	5

7.(8)b DEFICIENCIES
CHUMP (JOHNSON) - Public Lake User Only

DEFICIENCIES	RANK WEIGHT	RANK	CONSIDERED BY
no beach	28	01	6
shore weeds	10	02	2
algae	5	03	1
other	5	03	1
open area weeds	0	04	0

(8)7.a DEFICIENCIES
Property Owner Only

DEFICIENCIES	RANK WEIGHT	RANK	CONSIDERED BY
shore weeds	103	01	24
open area weeds	94	02	24
algae	72	03	18
no beach	53	04	12
other	27	05	9

(8)7.b DEFICIENCIES
Campground Leasee Only

DEFICIENCIES	RANK WEIGHT	RANK	CONSIDERED BY
shore weeds	15	01	3
other	10	02	2
algae	5	03	1
no beach	0	04	0
open area weeds	0	04	0

8.(9)a ACTIVITIES
NORTH BUCK - Public Lake User Only

ACTIVITIES	RANK WEIGHT	RANK	CONSIDERED BY
fishing	856	01	91
camping/relaxation	846	02	96
swimming	463	03	53
waterskiing	315	04	36
power boating	310	05	38
hiking	175	06	22
other	78	07	9
sailing/canoeing	57	08	7
picnicking	42	09	5
A.T.V.'s	16	10	2

8.(9)b ACTIVITIES
CHUMP (JOHNSON) - Public Lake User Only

ACTIVITIES	RANK WEIGHT	RANK	CONSIDERED BY
camping/relaxation	502	01	55
fishing	424	02	46
swimming	204	03	23
powerboating	127	04	16
picnicking	118	05	15
waterskiing	112	06	13
A.T.V.'s	80	07	10
hiking	46	08	6
sailing/canoeing	25	09	3
other	22	10	3

(9)8.a ACTIVITIES
Property Owner Only

ACTIVITIES	RANK WEIGHT	RANK	CONSIDERED BY
camping/relaxation	479	01	47
fishing	454	02	45
swimming	318	03	35
waterskiing	189	04	21
power boating	165	05	18
hiking	120	06	13
A.T.V.'s	74	07	8
playgrounds	52	08	6
canoeing	34	09	4
other	18	10	2
sailing	8	11	1

(9)8.b ACTIVITIES
Campground Leasee Only

ACTIVITIES	RANK WEIGHT	RANK	CONSIDERED BY
fishing	207	01	20
camping/relaxation	197	02	21
swimming	169	03	19
waterskiing	126	04	13
power boating	96	05	10
other	28	06	3
canoeing	10	07	1
hiking	8	08	1
A.T.V.'s	0	09	0
playgrounds	0	09	0
sailing	0	09	0

9.* TYPE OF CAMPING SHELTER USED

TYPE	PUBLIC LAKE USER NORTH BUCK (N = 112)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 55)
Tent	14	23
Van/truck camper	41	54
Trailer	25	18
Motorhome	17	3
Other	3	2

10. WINTER RECREATIONAL ACTIVITIES

WINTER USE	PUBLIC LAKE USER NORTH BUCK (N = 113)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 56)	PROPERTY OWNER (N = 58)	CAMPGROUND LEASEE (N = 24)
Yes	22	29	53	70
No	78	71	47	30

11. BOAT USE

BOAT USE	PUBLIC LAKE USER NORTH BUCK (N = 113)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 56)	PROPERTY OWNER (N = 58)	CAMPGROUND LEASEE (N = 24)
Yes	85	77	88	96
No	15	23	12	4

* Question 9 only found in "Public Lake User" survey.

11.a TYPE OF BOAT
Public Lake User Only

TYPE	PUBLIC LAKE USER NORTH BUCK (N = 96)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 32)
Motorboat	86.5	87.5
Rowboat	6	6
Canoe	7	6
Sailboat	--	--

11.b NUMBER OWNED
Property Owner/Campground Leasee Only

TYPE	NUMBER OWNED	OWNER				LEASEE			
		1	2	3+		1	2	3+	
Motorboat		82	16	2	(N=45)	89.5	10.5	--	(N=19)
Rowboat		80	--	20	(N=10)	--	--	--	(N=0)
Canoe		91	9	--	(N=11)	75	25	--	(N=4)
Sailboat		100	--	--	(N=1)	--	--	--	(N=0)

11.c BOAT HORSEPOWER

HORSEPOWER	PUBLIC LAKE USER NORTH BUCK (N = 88)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 27)	PROPERTY OWNER (N = 45)	CAMPGROUND LEASEE (N = 20)
1-10	25	37	27	40
11-50	23	30	24	20
51-100	36	30	31	35
101 +	16	3	18	5

SECTION E - YOUR VIEWS
(All surveys except where noted)

(12)17. NEED MORE BOAT LAUNCHES

NEED	PUBLIC LAKE USER NORTH BUCK (N = 113)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 55)	PROPERTY OWNER (N = 57)	CAMPGROUND LEASEE (N = 23)
Yes	13	54	19	35
No	75	44	74	56
Don't Know	11.5	2	7	9

12.(13) FISHING

RATING	PUBLIC LAKE USER NORTH BUCK (N = 112)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 57)	PROPERTY OWNER (N = 59)	CAMPGROUND LEASEE (N = 23)
Excellent	11	9	5	4
Good	38	31	32	39
Fair	23	23	49	35
Poor	11	2	8.5	22
Don't Know	17	35	5	--

13a(14) WATER QUALITY

RATING	PUBLIC LAKE USER NORTH BUCK (N = 113)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 57)	PROPERTY OWNER (N = 59)	CAMPGROUND LEASEE (N = 24)
Excellent	8	32	5	17
Good	70	51	56	75
Fair	16	5	35	4
Poor	--	--	2	--
Don't Know	6	12	2	4

13b(15) CHANGES IN WATER

TYPE OF CHANGE	PUBLIC LAKE USER NORTH BUCK (N = 113)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 56)	PROPERTY OWNER (N = 57)	CAMPGROUND LEASEE (N = 24)
Better	4	3	2	--
Same	45	43	49	67
Worse	11.5	7	25	21
Varies	1	3	19	--
Don't Know	38	43	5	12

14a(16a) LAKE SURFACE USE - AVERAGE WEEKEND

USE	PUBLIC LAKE USER NORTH BUCK (N = 112)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 56)	PROPERTY OWNER (N = 59)	CAMPGROUND LEASEE (N = 24)
Under used	2	32	5	4
Adequate	76	39	83	87
Over used	9	5	5	4
Don't Know	13	23	7	4

14b(16b) LAKE SURFACE USE - LONG WEEKEND

USE	PUBLIC LAKE USER NORTH BUCK (N = 110)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 56)	PROPERTY OWNER (N = 56)	CAMPGROUND LEASEE (N = 24)
Under used	1	32	--	--
Adequate	42	37.5	39	50
Over used	35	5	59	46
Don't Know	22	25	2	4

15a(17a) CAMPGROUND/BEACH USE - AVERAGE WEEKEND

USE	PUBLIC LAKE USER NORTH BUCK (N = 111)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 55)	PROPERTY OWNER (N = 58)	CAMPGROUND LEASEE (N = 23)
Under used	1	20	5	4
Adequate	73	53	64	70
Over used	12	7	17	17
Don't Know	14	20	14	9

15b(17b) CAMPGROUND/BEACH USE - LONG WEEKEND

USE	PUBLIC LAKE USER NORTH BUCK (N = 111)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 53)	PROPERTY OWNER (N = 56)	CAMPGROUND LEASEE (N = 24)
Under used	--	17	2	4
Adequate	34	53	14	29
Over used	44	7	71	58
Don't Know	22	23	12.5	8

16.* NEED FOR MORE BEACHES & DAY USE AREAS

NEED	PUBLIC LAKE USER NORTH BUCK (N = 112)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 57)
Yes	69	45
No	24	45
Don't Know	7	9

* Question 16, only found in "Public Lake User" survey.

18. NEED FOR MORE BOATING RESTRICTIONS

RESTRICTION	PUBLIC LAKE USER NORTH BUCK (N = 113)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 57)	PROPERTY OWNER (N = 58)	CAMPGROUND LEASEE (N = 24)
Unrestricted	31	35	38	58
Zoned speed	39	40	34.5	37.5
Zoned boating	24	17.5	15.5	4
Don't Know	6	7	12	--

18b. LOCATION FOR ZONING

LOCATION	PUBLIC LAKE USER NORTH BUCK (N = 41)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 0)	PROPERTY OWNER (N = 12)	CAMPGROUND LEASEE (N = 1)
Campsite bay	95	--	25	--
Southern bay	--	--	58	100
NW end	5	--	17	--
North shore	--	--	--	--
NE end	--	--	--	--

SECTION F - YOUR VIEWS
(Public Lake User Only)

19. ADEQUATE FACILITIES

ADEQUATE	PUBLIC LAKE USER NORTH BUCK (N = 113)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 57)
Yes	64	39
No	31	47
Don't Know	5	14

20. AWARE OF LAND USE CONFLICTS

CONFLICTS	PUBLIC LAKE USER NORTH BUCK (N = 112)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 57)
Yes	10	--
No	90	100

21. AWARE OF LAKE USE CONFLICTS

CONFLICTS	PUBLIC LAKE USER NORTH BUCK (N = 110)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 57)
Yes	7	--
No	93	100

22. ADDITIONAL COTTAGE DEVELOPMENT

DESIRABLE	PUBLIC LAKE USER NORTH BUCK (N = 100)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 57)
Yes	35	10.5
No	65	89.5

23. ADDITIONAL CAMPGROUND/PARK DEVELOPMENT

DESIRABLE	PUBLIC LAKE USER NORTH BUCK (N = 105)	PUBLIC LAKE USER CHUMP (JOHNSON) (N = 55)
Yes	54	69
No	46	31

SECTION G - YOUR VIEWS

(Property Owner/Campground Leasee Only)

19. AWARE OF LAKE USE CONFLICTS - NORTH BUCK

CONFLICTS	PROPERTY OWNER (N = 56)	CAMPGROUND LEASEE (N = 24)
Yes	32	33
No	68	67

20. ADDITIONAL COTTAGE DEVELOPMENT - NORTH BUCK

DESIRABLE	PROPERTY OWNER (N = 57)	CAMPGROUND LEASEE (N = 22)
Yes	40	64
No	60	36

21. COMMERCIAL SERVICES - NORTH BUCK

DESIRABLE	PROPERTY OWNER (N = 57)	CAMPGROUND LEASEE (N = 23)
Yes	33	39
No	67	61

22. ADDITIONAL CAMPGROUND/PARK DEVELOPMENT - NORTH BUCK

DESIRABLE	PROPERTY OWNER (N = 58)	CAMPGROUND LEASEE (N = 24)
Yes	36	50
No	64	50

23. FREQUENCY OF RECREATION - CHUMP (JOHNSON)

FREQUENCY	PROPERTY OWNER (N = 58)	CAMPGROUND LEASEE (N = 23)
Often	3	--
Occasionally	36	17
Never	60	83

24. AWARE OF LAND USE CONFLICTS - CHUMP (JOHNSON)

CONFLICTS	PROPERTY OWNER (N = 57)	CAMPGROUND LEASEE (N = 7)
Yes	28	29
No	72	71

25. AWARE OF LAKE USE CONFLICTS - CHUMP (JOHNSON)

CONFLICTS	PROPERTY OWNER (N = 55)	CAMPGROUND LEASEE (N = 8)
Yes	9	--
No	91	100

26. ADDITIONAL COTTAGE DEVELOPMENT - CHUMP (JOHNSON)

DESIRABLE	PROPERTY OWNER (N = 44)	CAMPGROUND LEASEE (N = 5)
Yes	18	20
No	82	80

27. ADDITIONAL CAMPGROUND/PARK DEVELOPMENT - CHUMP (JOHNSON)

DESIRABLE	PROPERTY OWNER (N = 43)	CAMPGROUND LEASEE (N = 6)
Yes	53.5	83
No	46.5	17

SECTION H - RECREATION

(Question 28 - Calendar Question - Property Owner Only)

(See Next Page)

28.. COTTAGE USER RATES (Persons per cottage)
(N = 38)

1987

MAY

S	M	T	W	T	F	S
					1 .44	2 1.15
3 .94	4 .13	5 .07	6 .02	7 .28	8 .78	9 2.07
10 1.39	11 .07	12 .13	13 .13	14 .47	15 1.42	16 5.31
17 5.23	18 5.05	19 .10	20 .10	21 .10	22 .42	23 1.63
24	25 .15	26 .05	27 .02	28 .10	29 .39	30 1.34
31						

JUNE

S	M	T	W	T	F	S
	1 .02	2 .02	3 .21	4 .07	5 .86	6 2.07
7 1.86	8 .13	9 .07	10 .13	11 .15	12 .92	13 2.76
14 2.52	15 .23	16 .15	17 .26	18 .31	19 1.15	20 2.86
21 2.47	22 .34	23 .34	24 .39	25 .44	26 1.73	27 4.28
28 3.94	29 2.26	30 1.76				

JULY

S	M	T	W	T	F	S
			1 2.92	2 1.89	3 2.47	4 4
5 3.57	6 1.10	7 1.21	8 1.36	9 1.42	10 2.23	11 3.94
12 3.84	13 .92	14 .65	15 .68	16 .73	17 1.13	18 2.55
19 2.81	20 .71	21 .71	22 .68	23 .71	24 1.86	25 4.05
26 3.86	27 .76	28 .76	29 .76	30 .71	31 1.73	

AUGUST

S	M	T	W	T	F	S
						1 4.89
2 4.13	3 4.73	4 .94	5 1.07	6 1.07	7 1.52	8 2.21
9 2.21	10 1.15	11 1.15	12 1.26	13 1.23	14 1.60	15 2.92
16 3.07	17 1	18 .81	19 .89	20 1.05	21 1.76	22 3.42
23 30	24 31	25 .52	26 .5	27 .42	28 1.26	29 2.18

SEPTEMBER

S	M	T	W	T	F	S
		1 .21	2 .10	3 .26	4 1.26	5 4.47
6 4.76	7 4.47	8 .10	9 .10	10 .10	11 .5	12 1.52
13 1.57	14 .05	15 .13	16 .07	17 .18	18 .68	19 1.86
20 1.86	21 0	22 0	23 .05	24 .10	25 .81	26 1.86
27 1.86	28 0	29 0	30 .05			

PROPERTY OWNER - QUESTION 2b

Number of Permanent Residents on the Property

* 10 said yes

1)	1	6)	2
2)	1	7)	2
3)	blank	8)	1
4)	5	9)	4
5)	3	10)	5

TOTAL = 24

PROPERTY OWNER - QUESTION 3a

Property Used For Agriculture?

* 7 said yes

1) -used for grain
   -no access to the lake

2) left blank

3) -no access to the lake

4) -partly used
   -no livestock

5) -no livestock

6) -type of livestock is Limousin
   -estimated # is 150
   -have access to the lake

7) -horses
   -3
   -have access to the lake

RANKING ANALYSIS PROCEDURE

The ranking method employed by this study is similar to the one used in other lake user surveys conducted by the Planning Branch of Alberta Municipal Affairs.

In three of the questions, respondents were given the opportunity to rank their answers or responses according to relative importance. For example, in the question which requested respondents to give reasons why they chose North Buck and Chump (Johnson) Lakes, it was possible to determine the reasons and the relative importance of that reason.

By way of example, the procedure followed in the ranking analysis of question 6(7) North Buck Public Lake Users the reasons for lake choice, is outlined below.

Fishing was ranked as the most important reasons by forty three of the respondents, sixteen ranked it second, sixteen ranked it third and two ranked it fourth. Since there were ten possible activities listed, the highest rank (rank No. 1) was assigned a weight of 10, the second highest rank (rank No. 2) was assigned a weight of 9, and so on. The total weight for fishing was therefore: (10 X 43) + (9 X 16) + (8 X 16) + (7 X 2) = 716.

This procedure is followed for each of the remaining nine activities. Total weights for each lake choice are then arranged in descending order to obtain the overall ranking for that particular question.

SUMMARY OF WRITE-IN COMMENTS FOR QUESTIONS 18 - 29

NORTH BUCK LAKE
(Property Owner Survey)

18) If you feel boating restrictions are required, please indicate type.

1)	skiers/motorboats too close to swimming areas	11
2)	speed limits to protect swimmers, fishing, & canoes	5
3)	no large (high power) boats on lake	3
4)	no motorboats on Little Buck Lake (because of wildlife)	2

others:

powerboats inconsiderate	1
waterskiing only on large part of the lake	1
speed control in campsite bay	1
speed control in narrows	1
no powerboats in areas of development	1
no powerboats on Chump	1

TOTAL = 27

19) are you aware of any lake use conflicts? (North Buck)

1)	skiers drop off too close to swimmers/shore	9
2)	fishing - waterskiing conflict	6
3)	waterskiers are careless	3
4)	Golden Nodding unsafe to swim	2

others:

need for swimming area	1
boaters park in swimming area	1
skiers not giving right-of-way to each other	1
skier - pleasure boating conflict in narrows	1
canoe - motorboating conflict	1
too many waterskiers	1

TOTAL = 26

20) do you feel additional cottage development is desirable or appropriate for North Buck Lake?

1)	do not want overdevelopment (hurts environment, get congestion, pollution, noise)	17
2)	yes, if in other areas where there is room (big part of lake)	11
3)	no, lots still available	4
4)	yes, is room	3
5)	leave as is (for the public)	2

others:

yes, if controlled (standards)	1
no more in Blue Heron Estates (depends on area)	2
yes, would help area economically	1

TOTAL = 41

21) are commercial/retail services desirable?

1)	is enough, and are close enough (eg. Caslan)	24
2)	perhaps later with more development	5
3)	the local services need the support, not competition	4
4)	yes, would be handy	3
5)	not enough population in area to support new services	2

others:

no, would bring more people to area	1
yes, if limited	1
help area economically	1
perhaps a marina	1
not near lake (eg. a gas station)	1

TOTAL = 43

22) is additional campground/park development desirable?

1)	is adequate, leave as is (more hurts environment, pollution, congestion, over use)	15
2)	if away from existing development	7
3)	if controlled (supervised)	3
4)	expand existing park	3
5)	yes, to accommodate extra campers	2
6)	if number of stalls is limited	2

others:

not enough designated sites	1
attracts less responsible people	1
clean up public area on North side (Chump)	1
develop at narrows	1
better organization/control of existing campground	1
would give owners more privacy	1

TOTAL = 38

24) are you aware of any land use conflicts? Chump (Johnson)

1)	restrict A.T.V.'s (hurt environment, conflicts between A.T.V.'s & motorcycles - campers & hikers)	8
2)	need for supervision (noise, gargabe, cut trees)	2
3)	dislike 4-wheel drives	2
4)	dislike random campers	2

others:

need more designated camping areas	1
unrestricted use of Chump is negative	1

TOTAL = 16

25) are you aware of any lake use conflicts? Chump (Johnson)

need regulations on horsepower (5hp or less)	1
lake is too small, no motors	1
need better boat launches	1
skiers conflict with smaller boats (pleasure/fishing)	1

TOTAL = 4

26) is additional cottage development desirable on Chump (Johnson)?

1)	no further development (preserve natural beauty, environment, no congestion)	12
2)	too small for further development	7

others:

owners usually take care of their property	2
would allow more places to recreate	1
yes, if limited number	1
no, lots still for sale	1
would help control the use of the area	1

TOTAL = 25

27) is additional campground/park development desirable for Chump (Johnson)?

1)	no, destroys environment	8
2)	designated camping spots needed	5
3)	would require supervision	5
4)	yes, area is big enough	3
5)	provides more recreational property for relaxation	3

others:

only if vehicles are controlled and restricted to designated roads and trails	1
if it is a small area	1
as long as it is contained at Chump	1
yes, might increase tourism	1

TOTAL = 28

29) Additional comments

1)	no further development (destroys nature, congestion, over use)	16
2)	development elsewhere (away from existing congestion, north part of Buck)	8
3)	need wildlife protection (island with Blue Herons)	6
4)	need for supervision (noise, garbage, pollution)	10
5)	need for more campground (North Buck) (for overflow of campers)	5
6)	no random campers	5
7)	need a safe swimming area	4
8)	A.T.V.'s problem:	
	restrict or	3
	designate trails	3
9)	no trailer park (north of Golden Nodding)	3

others:

no commercial fishing	2
weeds algae problem	2
have catch limits (fish)	1
transplant new fish	1
more hiking/skiing trails	1
more development would help the area (tourism)	1
restrictions on boating would push people elsewhere (Chump - Golden Nodding)	1
agricultural development, removing trees	1
Blue Heron Estates private docks take up the beach	1
needs:	
roads improved	3
water facilities	1
more beaches (Blue Heron)	2
signage	1
garbage pick-up	1

Chump (Johnson):

has indiscriminant use	1
want no motorboats	1
designate sites for R.V.'s	2

TOTAL = 85

SUMMARY OF WRITE-IN COMMENTS
FOR QUESTIONS 18 - 28

NORTH BUCK LAKE
(Private Campground Leasee Survey)

18) should there be any restrictions on boating?

1)	no stunting by motorboats	4
2)	need speed limit in narrows	2
3)	no boats in swimming area	2
4)	restrictions around beach area	2

others:

control skiing in south bay	1
require a special area for waterskiing	1

TOTAL = 12

19) aware of any lake use conflicts on North Buck?

1)	speed boats come too close to shore	2
2)	is no respect for smaller boats	2
3)	need to stop stunting	2
4)	dislike random campers (make noise, leave garbage)	2

others:

need designated swim area	1

TOTAL = 9

20) is any additional cottage development desirable on North Buck?

1)	yes, if at north or northwest end of the lake	3

others:

no, especially in south bay area	1
yes, if land is available	1
yes, interested in buying a lot	1

TOTAL = 6

21) are commercial services desirable for North Buck?

1)	Caslan is close enough (and has enough)	12

TOTAL = 12

22) is more campground/park development desirable on North Buck?

1)	if at other end of the lake	7

others:

no, already at maximum use	1
if better controlled than present	1
if well planned	1
if it is a private campground	1

TOTAL = 11

24) aware of any land use conflicts on Chump (Johnson)?

there is unorganized camping	1
garbage is left behing	1
need for a better boat launch	1
TOTAL =	**3**

25) aware of any lake use conflicts on Chump (Johnson)?

*no additional comments

26) is additional cottage development desirable on Chump (Johnson)?

*no additional comments

27) is more campground/park development desirable on Chump (Johnson)?

1)	would accommodate overflow of campers	2

others:

would eliminate random camping	1
might take load off of North Buck campground	1
if properly supervised	1
TOTAL =	**5**

28) Additional comments:

1)	control random camping on south bay	5
2)	need speed limit signs between east and west lease areas (creates dust/safety problems)	4
3)	need more garbage disposal	3
4)	need for pedestrian crosswalks	2
5)	road improvements required	2
6)	keep lake water clean	2
7)	control numbers of boats in small bays	2
8)	stop commercial fishing	2
9)	fishing is poor	2
10)	need a pay phone	2
11)	Caslan needs a firefighting unit	2

others:

irresponsible boaters	1
control stunting by boats	1
new campground at north end	1
any future development should be at north end	1
generally satisfied	1
develop and control NW side or close it altogether	1
east side developed enough	1
expand existing campground to accommodate random campers	1
need drinking water	1
need a fish cleaning station	1
public campground requires better supervision	1
too much noise pollution	1
develop land between Souch's and public campground	1
need more roads from Caslan to North Buck Lake	1
speed restrictions on boats near developed areas	1
need more "well-planned" cottages	1
could use some weed clean up	1
restrict dirt bikes	1

TOTAL = 46

SUMMARY OF WRITE-IN COMMENTS FOR QUESTIONS 19 - 24

NORTH BUCK LAKE
(Public Lake User Surveys)

19) are existing recreational facilities adequate?

1)	need a playground	10
2)	need more wood	4
3)	require a better water supply	4
4)	could use a dumping station	3
5)	keep wood dry and clean	2
6)	want power hook-ups	2
7)	improve washroom facilities (add showers)	2
8)	picnic area needed	2

others:

need more facilities such as a baseball diamond	1
should have boats for rent	1
are no recreational facilities	1
need a pay phone	1
consult campers to find out what they want	1
bring back old cookhouse	1
want cleaner washrooms	1
need designated swim area	1
need additional boat launch	1
campground needed on NW side	1
horseshoe pits wanted	1
want more beaches	1

TOTAL = 41

20) aware of any land use conflicts?

1)	dislike random campers	4

others:

want access to all areas of the beach	1
is garbage left on south beach	1
unruly behaviour of campers	1
cottage owners should not develop	1
cottage owners take wood from campsite	1

TOTAL = 9

21) aware of any lake use conflicts?

1)	small boats (canoes) being disturbed by larger boats (speed boats)	4
2)	skiers disturbing swimmers (coming too close/careless)	2
3)	dislike commercial fishing	2
4)	skiers landing and taking off in campsite bay	1

TOTAL = 9

22) is additional cottage development desirable?

1)	if kept away from the campground and put on the large part of the lake	5
2)	no, is already enough	4
3)	yes, lake is big enough	3
4)	if confined to one area	2

others:

makes lake look "too settled"	1
some, but lake should not look "too private"	1
no, will ruin the natural beauty	1

TOTAL = 17

23) is additional campground/park development desirable?

1)	yes, overcrowded on long weekends (need overflow)	8
2)	no, adequate for lake size	6
3)	if at other end of the lake (north part)	5
4)	sure, lots of room	3
5)	need area for day campers	2
6)	no, already too busy	2
7)	need more stalls along the lakefront	1

TOTAL = 27

24) Additional comments:

1)	need a designated swimming area and playground for kids (make if safer than present)	23
2)	more wood needed	18
3)	keep wood clean and dry	16
4)	more supervision needed	16
5)	generally satisfied	14
6)	park needs better facilities	7
7)	improve boat launch/pier facilities	6
8)	number stalls and designate sites	5
9)	need pay phone	5
10)	require dumping station	5
11)	park not big enough for numbers using it (more development needed)	4
12)	want better beach area	4
13)	improve shoreline by removal of weeds and add beach	3
14)	like group camping	3
15)	sites need improvement	3
16)	fee is too much for what is received	3
17)	well water needs improvement	3
18)	want shower facilities	2
19)	no further development needed	2
20)	more signage required	2

others:

have zoned speed in campsite bay	1
day use area needed	1
boaters are careless	1
washrooms need better ventilation	1
trim stumps to ground level	1
no dogs should be allowed	1
keep government out (park is worse)	1
large boats swamp canoes	1
need boats to rent	1
clay dumped on a sandy beach in the day use area (ruined it)	1
have more shoreline camping	1
do not remove shoreline camping	1
restock lake with fish	1
boaters park on the beach	1
need power hook-ups	1
more sites wanted	1
more picnic tables needed	1
no cutting trees for firewood	1
no speed boats in campsite bay	1
speed boats hurt the environment	1
clear trees hanging over the road	1
need cleaner restrooms	1
keep wood free of charge	1
put cement pads around firepits	1
need running water	1
want better access to beach for everybody	1
require a store	1
restrict A.T.V.'s	1
make reservations possible	1
do not allow commercial fishing	1
park would be better with less sites	1

TOTAL = 175

SUMMARY OF WRITE-IN COMMENTS FOR QUESTIONS 19 - 24

CHUMP (JOHNSON) LAKE
(Public Lake User Survey)

19) are existing recreational facilities adequate?

1)	need a washroom	8
2)	are no facilities	6
3)	need picnic tables	6
4)	firepits needed	3

others:

require a boat launch	1
cookhouse needed	1
like lake as is	1
more wood needed	1
further development required	1

TOTAL = 28

20) are you aware of any land use conflicts?

*no comments

21) are you aware of any lake use conflicts?

1)	keep motorbikes out	3

TOTAL = 3

22) is additional cottage development desirable?

1)	yes, there is a shortage	1
2)	would create some peace and quiet	1

TOTAL = 2

23) is additional campground/park development desirable?

1)	yes, if small and controlled	24
2)	picnic tables required	3
3)	washrooms needed	2
4)	restrict A.T.V.'s	2
5)	need more facilities	2
6)	have uncontrolled camping everywhere	2
7)	firepits are needed	2

others:

road improvements needed	1
no, will become overused	1
beach is needed	1
want more refuse containers	1

TOTAL = 41

24) Additional comments:

1)	like the place	6
2)	stop people leaving garbage	3
3)	no cutting of trees	3
4)	leave as is (no development)	3
5)	if developed, keep it controlled	3

others:

needs water	1
less restrictions	1
no government involvement	1
keep hiking trails open	1
has excellent berry picking	1
need signs that designate "camping"	1

TOTAL = 24

APPENDIX 3. CALCULATION OF SOCIO-PERCEPTUAL RECREATIONAL CARRYING CAPACITY

A. NORTH BUCK LAKE

1. Existing Recreational Development Situation:

Residential/Recreation Development*	North Buck Lake total lake	main basin	south basin	north basin
·no. of registered/approved residential lots	199	8	74	117
·no. of developed residential lots	101	8	55	38
·no. of developed public campsites	80	80	0	0
·no. of existing private campground stalls	115	36	79	0
·no. f private campground stalls leased	79	16	63	0

*as of July, 1987.

2. Density of Recreational Lake Development*:

	North Buck Lake total lake	main basin	south basin	north basin
·acres of lake surface per developed unit (present)	15a/u	26a/u	4a/u	18a/u
·acres of lake surface per developed unit (existing potential)	10a/u	22a/u	3a/u	6a/u
·surface area of lake (acres)	3904	2742	470	692

*as of July, 1987.

Note: As the density of lake development increases, the number of acres of lake surface available to each recreation unit decreases.

3. Perceptions of Lake Usage Intensities:

	North Buck Lake public lake users	property owners	campground leasees
% of respondents perceiving lake surface overused during average weekends	9%	5% (combined average 7%)	4%
% of respondents perceiving lake surface overused during long weekends	35%	59% (combined average 44%)	46%
% of respondents perceiving campground/ public beach overused during average weekends	12%	17% (combined average 14%)	17%
% of respondents perceiving campground/ public beach overused during long weekends	44%	71% (combined average 54%)	58%

B. CHUMP (JOHNSON) LAKE

1. Existing Recreational Development Situation:

Residential/Recreation Development*	total lake
·number of registered/approved residential lots	--
·number of approved public campsites	30
·number of approved day use sites	25
·number of developed public campsites	0
·number of developed day use sites	0

*as of July, 1987.

2. Density of Recreational Lake Development*

	total lake
·acres of lake surface per developed unit (present)	n/a
·acres of lake surface per developed unit (existing potential)	14a/u
·surface area of lake (acres)	755

*as of July, 1987.

3. Perception of Lake Usage Intensities:

	public lake users
% of respondents perceiving lake surface overused during average weekends	5%
% of respondents perceiving lake surface overused during long weekends	5%
% of respondents perceiving campground/ public beach overused during average weekends	7%
% of respondents perceiving campground/ public beach overused during long weekends	7%